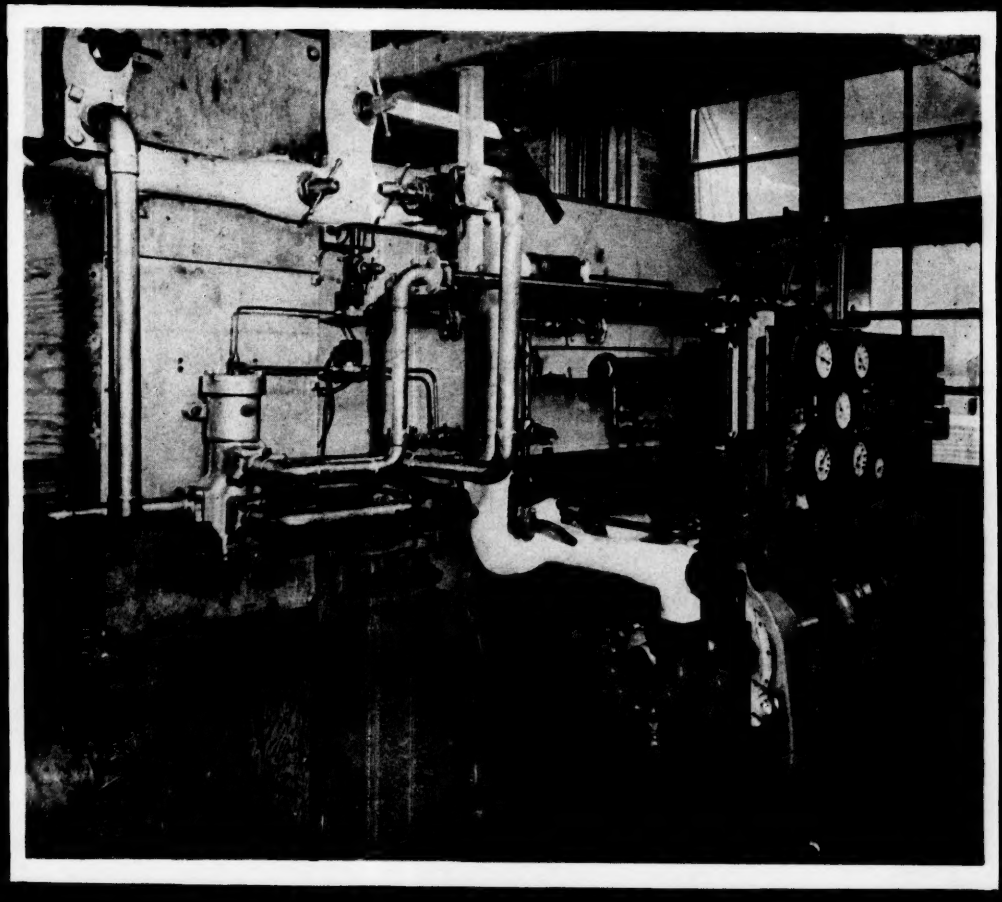
ICE REFRIGERATION



Report of Annual Warehousing Convention . . . . . Page 15

JUNE • 1953

Testing and Rating of Forced Air Coils . . . . . Page 33

New

SAVES WATER and CUTS MAINTENANCE COSTS . . .

Illustration shows two views of a 55 ton Condenser Tower prior to partial disassembly for shipment.

Vogt

CONDENSER TOWER

FOR CONDENSING REFRIGERANTS

SINGLE RESPONSIBILITY:

Vogt, leading builder of refrigeration condensers, assumes responsibility for engineering the unit. Only one purchase order needed.

SHOP FITTED:

To cut down field assembly labor. Requires no cutting or fitting of pipe.

Designed for today's water conservation requirements, and to keep refrigeration costs low, the *new* Vogt Condenser Tower meets the need for a proven, readily cleanable condensing unit.

The Vogt Condenser Tower consists of a multipass straight tube condenser, a receiver, an oil trap, a cooling tower, and a water pump. Removable cast iron heads permit easy cleaning of the condenser tubes.

Water costs are extremely low since the cooling water is recirculated continuously and requires only a small amount of makeup to replace losses due to windage and evaporation.

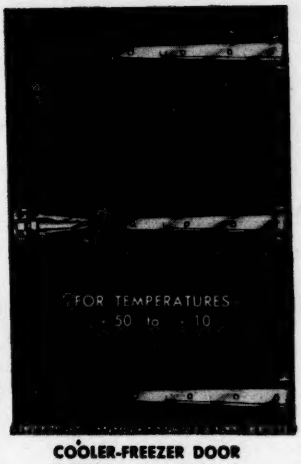
Condenser Tower units are available in capacities ranging from 5 to 50 tons refrigeration. Additional information will be furnished upon request.

HENRY VOGT MACHINE CO., Louisville 10, Kentucky

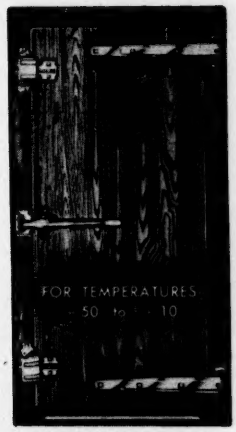
BRANCH OFFICES: NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO, ST. LOUIS, DALLAS, CHARLESTON, W. VA.

"Butcher Boy"

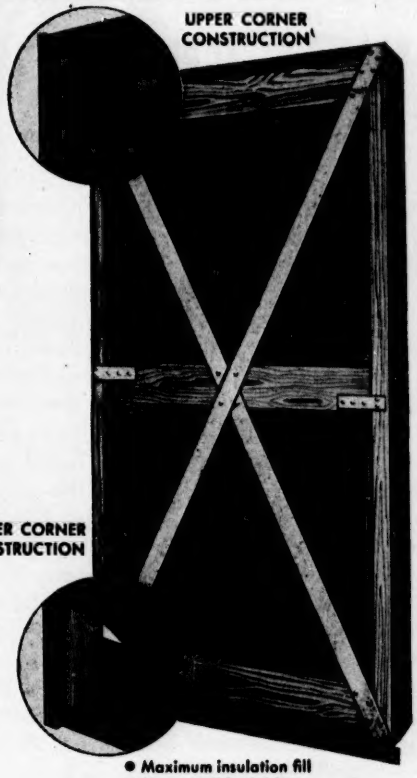
REFRIGERATOR DOOR CO.



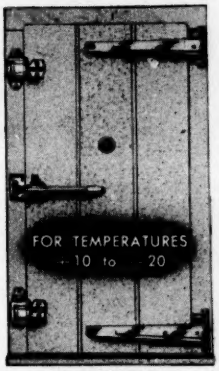
COOLER-FREEZER DOOR
- Modern streamlined job
- 100% "Douglas Fir"
- Sanitary hardware



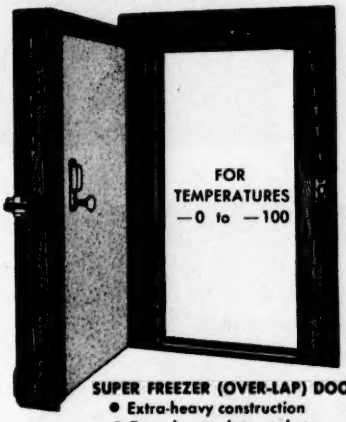
X-52 PLYWOOD PANEL DOOR
- Plywood front and back
- Extra heavy-duty hardware
- Special type gaskets



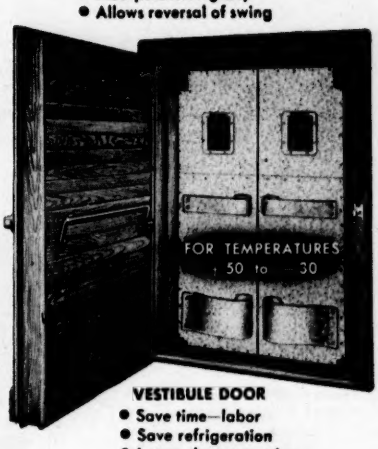
- Maximum insulation fill
- Most possible rigidity
- Allows reversal of swing



LOW TEMPERATURE DOOR
- Entire metal-clad front
- Extra heavy-duty hardware
- Special type gaskets

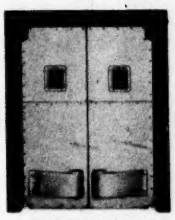


SUPER FREEZER (OVER-LAP) DOOR
- Extra-heavy construction
- Extra-heavy duty gaskets
- Extra heavy-duty hardware

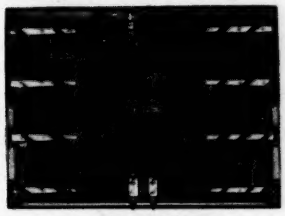


VESTIBULE DOOR
- Save time—labor
- Save refrigeration
- Large plant operation

TRACK DOOR
- For abattoirs
- Meat handling rails
- Banana rooms



AUTO-CLOSE DOOR
- For loading dock
- Intra-cooler doors
- Heavy trucking



DOUBLE DOOR
- For palletizing
- For carloading
- For elevator shafts

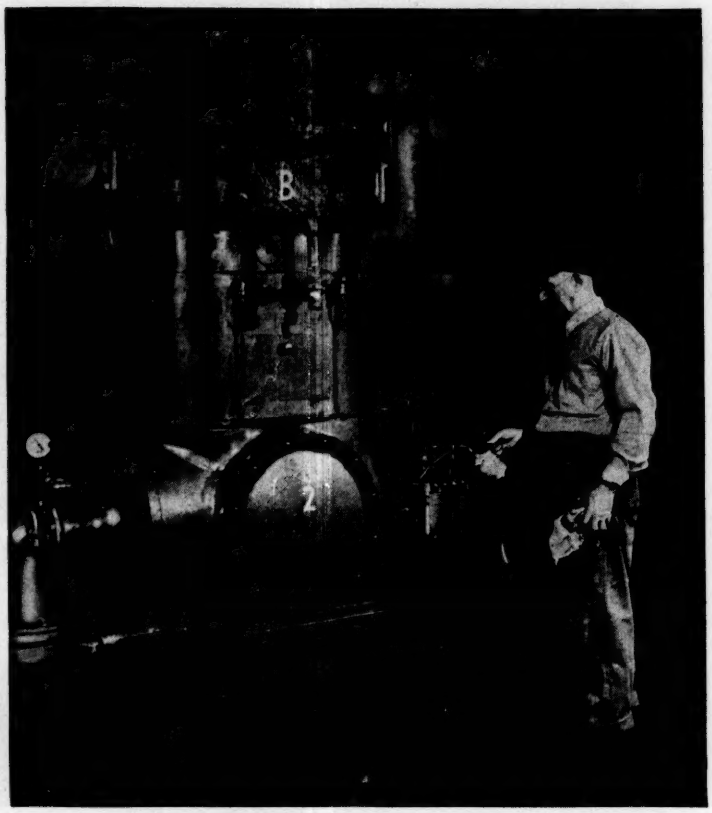
When a Man Thinks Twice ...He Makes Comparisons!

BUTCHER BOY REFRIGERATOR DOOR CO. • HARVARD, ILL.

SUNISO RESTORES COMPRESSOR EFFICIENCY FOR WELL-KNOWN ICE CREAM MANUFACTURER

Production of the famous Louis Sherry ice creams was threatened by an inadequate refrigeration oil. It formed sludge and carbon that robbed the compressors of efficiency. Deposits were so heavy that the line filters had to be fitted with special handles in order to be rotated. Every two weeks the oil had to be drained from the entire system and passed through special filtering equipment. Complete oil changes were frequently necessary.

Facing this serious condition, the plant called in a Sun representative for technical assistance. He recommended a Suniso Refrigeration Oil. His recommendation was followed, and the result has been absolutely trouble-free operation of all the compressors. Four years have passed, and they are functioning perfectly at temperatures ranging from 160 F to −30 F. Sludge and carbon deposits have been eliminated. The line filters turn with a twist of the wrist at all times. The oil is now changed only once every six months. Oil consumption has been reduced 66 percent, overall maintenance reduced 33 percent.



NO MORE SLUDGE AND CARBON. Four years ago a refrigeration oil hindered efficient operation of the nine compressors used in the Louis Sherry ice cream plant. The heavy deposits the oil formed necessitated special handles for operation of the line filters, plus frequent draining for external oil filtering. Changing to Suniso ended the trouble.

Sun Oil Company, Dept. IR-6, Phila. 3, Pa.

We are having compressor troubles possibly due to faulty lubrication.

- ☐ I would like to consult with a Sun representative.
- ☐ Send me a free copy of the technical bulletin "Lubrication of Refrigeration and Air Conditioning Equipment."

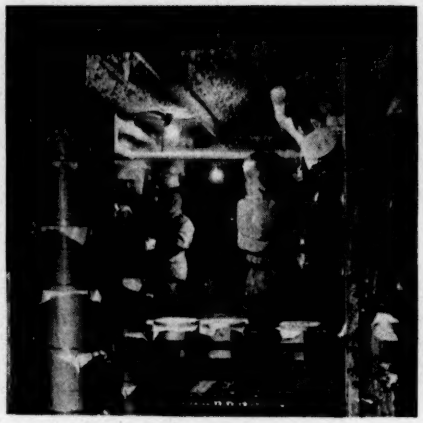
Name_____

Title_____

Company_____

Street_____

City_____ Zone____ State____



TECHNICAL ASSISTANCE AVAILABLE. Sun's engineers are at your service for consultation on lubrication matters. It will pay you to utilize the broad experience they have gained in solving a wide variety of problems in many different industries.

SUNISO DOES NOT "WAX OUT." In the hardening rooms, where $175,000 worth of ice cream is stored before shipment, temperatures are held between −25 F and −30 F. This is no challenge to Suniso, which remains waxfree at temperatures far lower.

OVER 1,000,000 GALLONS of ice cream is made by Louis Sherry every year. Four 300-gallon-per-hour and three 150-gallon-per-hour freezers lower the temperature of the mix to 22 F for packaging at the rate of 30 pints a minute.

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June, 1953

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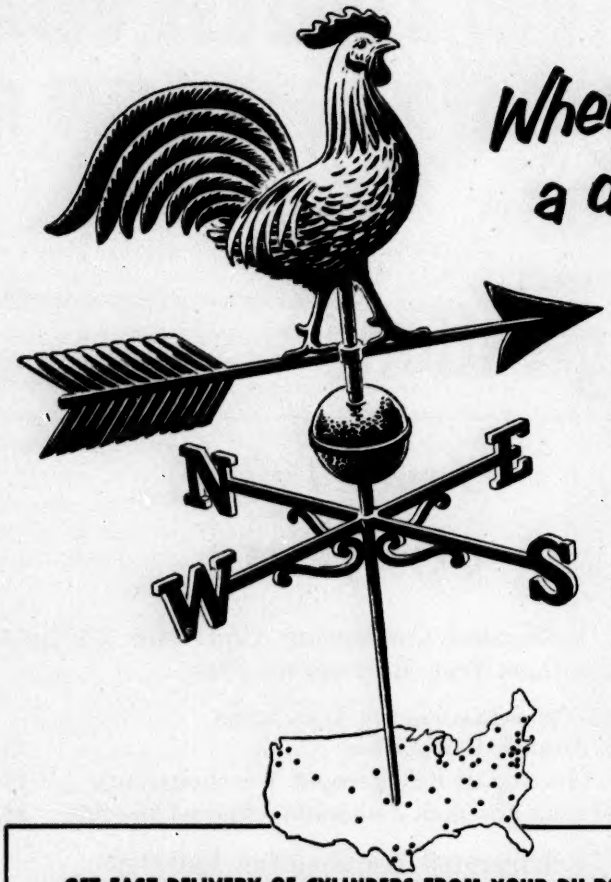

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99.99% AMMONIA

Wherever your plant is located, you can count on fast deliveries of Du Pont "National" Anhydrous Ammonia—"Standard of the refrigeration industry for 72 years." Count on it to keep your equipment operating at peak efficiency, too—it's pure, uniform 99.99% ammonia.

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This bag opens a

new marke

for the ice industry

New Wet Strength Paper Sack For Sweet Corn Requires 20 Lbs. Of Ice Per Bag

SUCCESSFULLY market-tested last year, the new Union Iced Sweet Corn Bag has proved its value to the produce industry in protecting the flavor, freshness and appearance of corn from field to consumer.

Growers of sweet corn represent an important new sales target...a potential market for over 200,000 tons of crushed ice annually.

Many growers already are familiar with the new Wet Strength Iced Sweet Corn Bag. Others rapidly are becoming acquainted with it through recommendation by government and farm agencies, as well as through Union Bag advertising.

You are a logical supplier not only of the ice needed for these bags—20 lbs. per sack—but also the bags themselves. Get in on the ground floor. Many Ice companies already are sending in substantial orders, to be included in their regular Ice Bag cars.

Easy wire tie fastening • Three layers of sturdy, wet-strength kraft paper • Protection against breakages • Attractive printing on front • Big capacity: 20 lbs. of ice, five dozen ears in 22½" x 34"—7½" bag • Comes printed in green, as illustrated • Ice in bags is reusable. For example, for counter refrigeration • Perforations provide drainage for melted ice water • "Satchel bottom" construction for convenient standing and filling • Guaranteed to cut deterioration and waste.

FIVE DOZEN EARS OF CORN are inserted in the bag and 20 lbs. of crushed ice placed on top. The ice is mixed, fine and coarse, for quick cooling and longer-lasting refrigeration.

UNION

WET STRENGTH

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Woolworth Building, New York 7, N. Y.

Please send samples and more information about the new Iced Sweet Corn Bag and the sales opportunities it presents for crushed ice.

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THE MOST ECONOMICAL AND EFFICIENT TYPE OF REFRIGERANT IN USE TODAY.
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ALLIED CHEMICAL & DYE CORPORATION
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Whatever the refrigeration job, there's an easy-to-read Taylor mercury-in-glass thermometer designed especially for it. Shown here are just 4 of the many types for **Cold Water and Brine Lines, Insulated Brine or Ammonia Lines, Condenser and Water Lines, Hot Water and Steam Lines, Ammonia Discharge Lines, Brine Tanks and Cold Storage Rooms.**

Wide selection of bulb and stem styles and angles. Temperature ranges from minus 40° to +950°F or equivalent Centigrade. Rattle and dust-proof cases. Extra thick glass. 3-times-easier-to-read BINOC® tubing.

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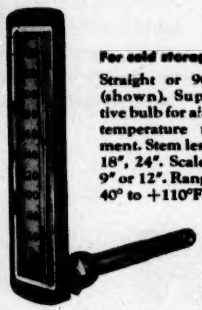
Oblique angle (150°) designed for easy reading below eye level. Adjustable connection, 1" diameter brass stem. Stem lengths 12", 24", 36". Scale length 12" Range minus 40° to +110°F.

For small diameter brine or ammonia lines
½" fixed thread connection. Stem extends 1" below the thread, 7" scale graduated in 2° divisions. Case is insulated from scale to insure accurate temperature measurement. Range minus 20° to +120°F.



For cold storage rooms
Straight or 90° angle (shown). Supersensitive bulb for air and gas temperature measurement. Stem lengths 12" 18", 24". Scale lengths 9" or 12". Range minus 40° to +110°F.

For insulated brine or ammonia lines
Insulated stem, straight (shown) or 90° angle. Separable socket connection. Scale lengths 7", 9", 12". Range minus 40° to +110°F.

*Reg. U. S. Pat. Off.

There's a Taylor Thermometer for your temperature measuring problem—no matter what it is. Ask your Taylor Field Engineer, or write for **Catalog 300.** Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

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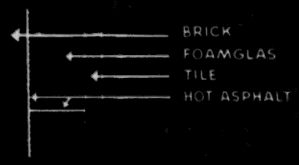
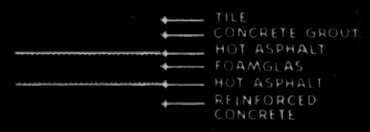


EXTERIOR WALL SECTION



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C. W. Schmidt

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- ☐ Normal Temperature Buildings Booklet
- ☐ Engineer to help with specific problem
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Company_____

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City_____ Zone State

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Louisville, Ky.....Jackson 4321
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Charlotte, N. C.....3-5152-3-4
Cincinnati, Ohio.....Cherry 1333
Cleveland, Ohio.....Endicott 1-1160
Columbus, Ohio.....Garfield 2161
Toledo, Ohio.....Adams 9131
Oklahoma City, Okla.....79-2551
Tulsa, Okla.....37151-2-3
Portland, Ore.....Twinoaks 1151
Philadelphia, Penna....Poplar 5-0100
Pittsburgh, Penna.....Hemlock 1-1200
Pittsburgh Prov. & Packing Co., Penna.....GR 1-2460
Providence, R. I.....EL 1-1400
Chattanooga, Tenn.....6-4725
Knoxville, Tenn.....3-5135-6
Memphis, Tenn.....5-4311
Amarillo, Tex.....6-5246
Corpus Christi, Tex.....6-5246
Dallas, Tex.....Randolph 5901
El Paso, Tex.....3-3621
Fort Worth, Tex.....Market 2101
Harlingen, Tex.....2050
Houston, Tex.....Capitol 1175-5
San Antonio, Tex.....Garfield 5321
Richmond, Va.....3-1876
Roanoke, Va.....7751-2-3
South Norfolk, Va.....66-2441
Seattle, Wash.....Elliot 7180
Spokane, Wash.....Lakeview 1541
Charleston, W. Va.....27-165
Milwaukee, Wisc.....MA 8-6200

AGENTS

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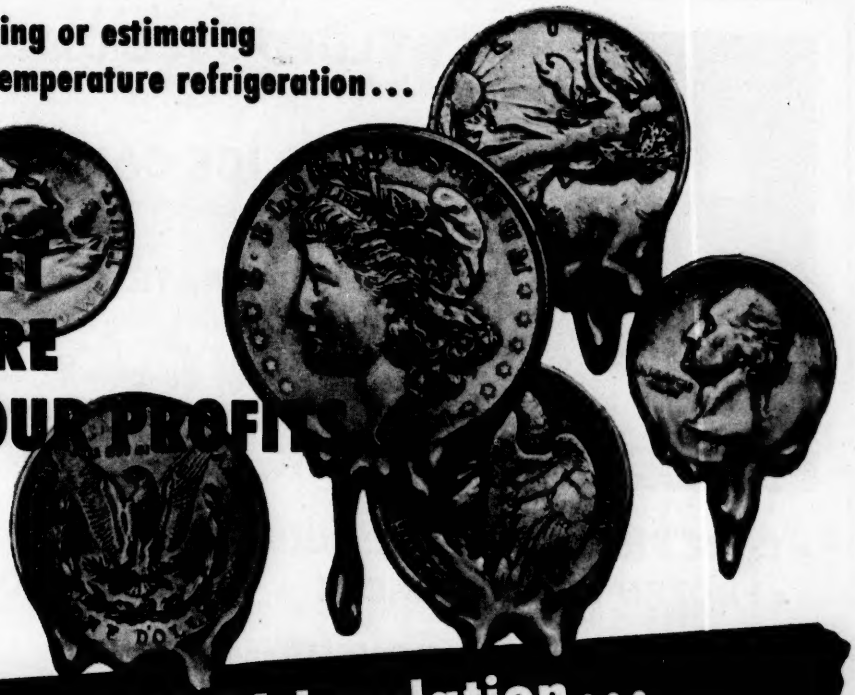

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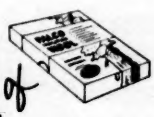

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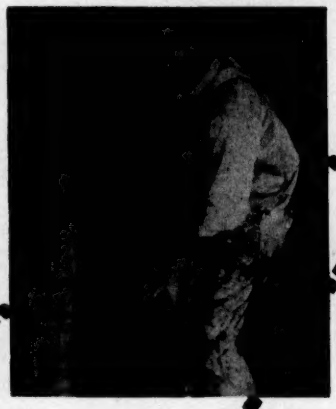

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FASTER ICE

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that have been used for years in ice plants the country over!

You will have *clearer* ice . . . with fewer white butts, heavy cores, and cloudy veils that your customers don't like . . . when you use TEMPLETS, the little green tablets that have been an aid to ice-makers for years.

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TEMPLETS are now packed in plastic moisture-proof bags in the drums to bring them to you in the best possible condition.

See for yourself what TEMPLETS can do for you. Put them to work in your own plant, as countless other ice manufacturers have been doing for years in all parts of the world! A free supply of TEMPLETS is available to you for the asking in order that you may test them in your own plant and convince yourself of the big job they can do by giving you *clearer, stronger, faster* ice!

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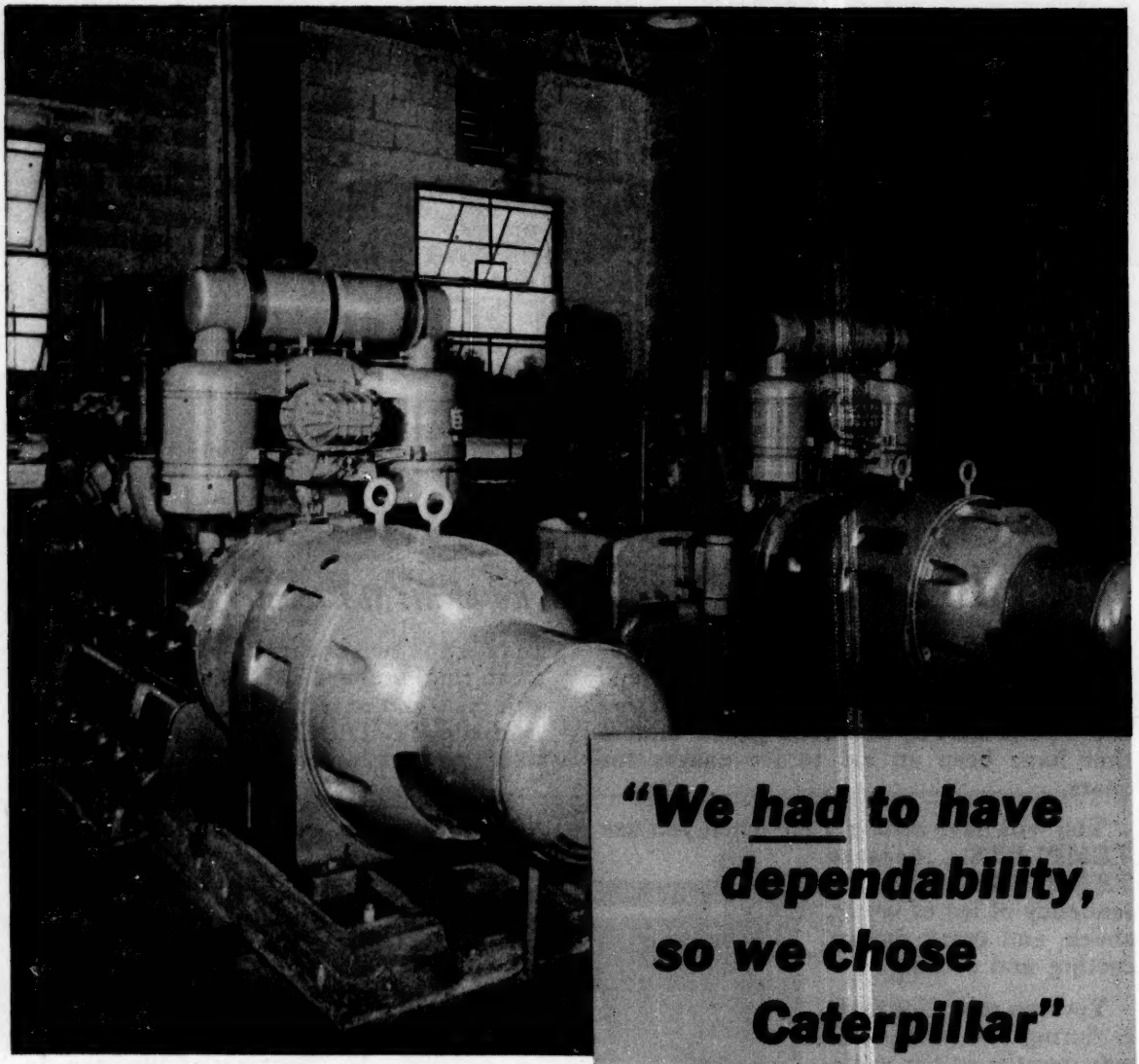

"We had to have dependability, so we chose Caterpillar"

Central Florida Refrigerated Warehouse, Plymouth, Fla., is the largest of its kind in the South. At one time, it may contain more than $25,000,000 worth of frozen citrus concentrate and foodstuffs at zero storage temperature. The warehouse has installed two Caterpillar D397 Electric Sets for stand-by power.

"We *had* to have dependability," explained Don H. Burke, general manager, "so we chose Caterpillar."

He added: "We hope we never have to use these engines for any length of time. But if we do, it is a source of great satisfaction to know that we have Caterpillar dependability to protect us."

There are sound engineering reasons why the words "Caterpillar" and "dependability" have become synonymous. All Cat* Engines, like those standing on guard in Plymouth, are products of exhaustive research, careful design and high-quality materials. They are conservatively rated.

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In the Spotlight

REFRIGERATED WAREHOUSEMEN meeting in Washington for the annual convention May 17-21 heard outstanding headline speakers and participated in panel discussions of questions of prime importance at this time. Report of this meeting starts on page 18. The American Warehousemen's convention report starting on page 15 attracted the largest attendance in its history, and the program was well developed to hold their interest throughout the two sessions. Meeting three days previously, May 15-17, The Refrigeration Research Foundation reviewed the past year's work and outlined plans for future work. This report starts on page 24.

THE PRESIDENT'S Report at the annual convention of the National Association of Refrigerated Warehouses listed the highlights and accomplishments of the sasociation during the past year. It starts on page 27.

METHODS OF TESTING and rating plower type coils was the subject of a paper given by F. Edward Ince, research engineer, Marlo Coil Company, at the 43rd annual NAPRE convention. The author states that most of the tests today are in accordance with the Standards of ASRE. Basically the test consists of two simultaneous checks on the heat transfer of the coil by measuring the volume and temperature differences of the air throughout the coil. For further details see article on page 33.

COOLER OCCUPANCY in refrigerated warehouses on April 30 was greater than the previous month in nearly all regions, but there was a national decrease in freezer holdings from 73 to 70 percent. For details, see complete report on page 29.

COVER PICTURE: View of a calibrated condensing unit with multiple connections for testing refrigerant flow. Also shown, a rotometer (at left of panel board) which is used for observing the liquid rate of flow. See article starting on page 33. (Photo courtesy Alco Valve Co.)

SEVERAL QUESTIONS are being asked about the subject of sub-scalding or semi-scalding of turkeys and chickens. This is discussed in the article on page 31, with one outstanding conclusion that sub-scalding cuts processing cost, but it affects method of holding and display.

A BAD SAFETY record for the Colonial Ice Company, Greensboro, N. C. caused premiums to go up, well above normal rates. In 1948 a safety program was put into effect, the result of which is reflected now in the current insurance record which shows a decrease in accidents. The plan is told in detail in the article starting on page 41.

Smashed Up Ice

FROM Indiana comes this ice vending story. An employee was servicing the station when he heard the mechanism deliver a bag of ice. A short pause, with feminine expressions that sounded like a woman annoyed, and another bag of ice was delivered, and another, and another, until five bags of crushed ice lay in front of the vending mechanism. He decided to investigate, and was confronted by an irate woman, who declared with mounting anger: "This ice. It's all smashed up. What in the name of common sense do you expect a person to do with ice that's all smashed up?" Realizing that she wanted block ice, he sold her a piece of the desired size, refunded the money she had put in the vendor and sent her away happy, with ice that wasn't "all smashed up."

60 Years Ago

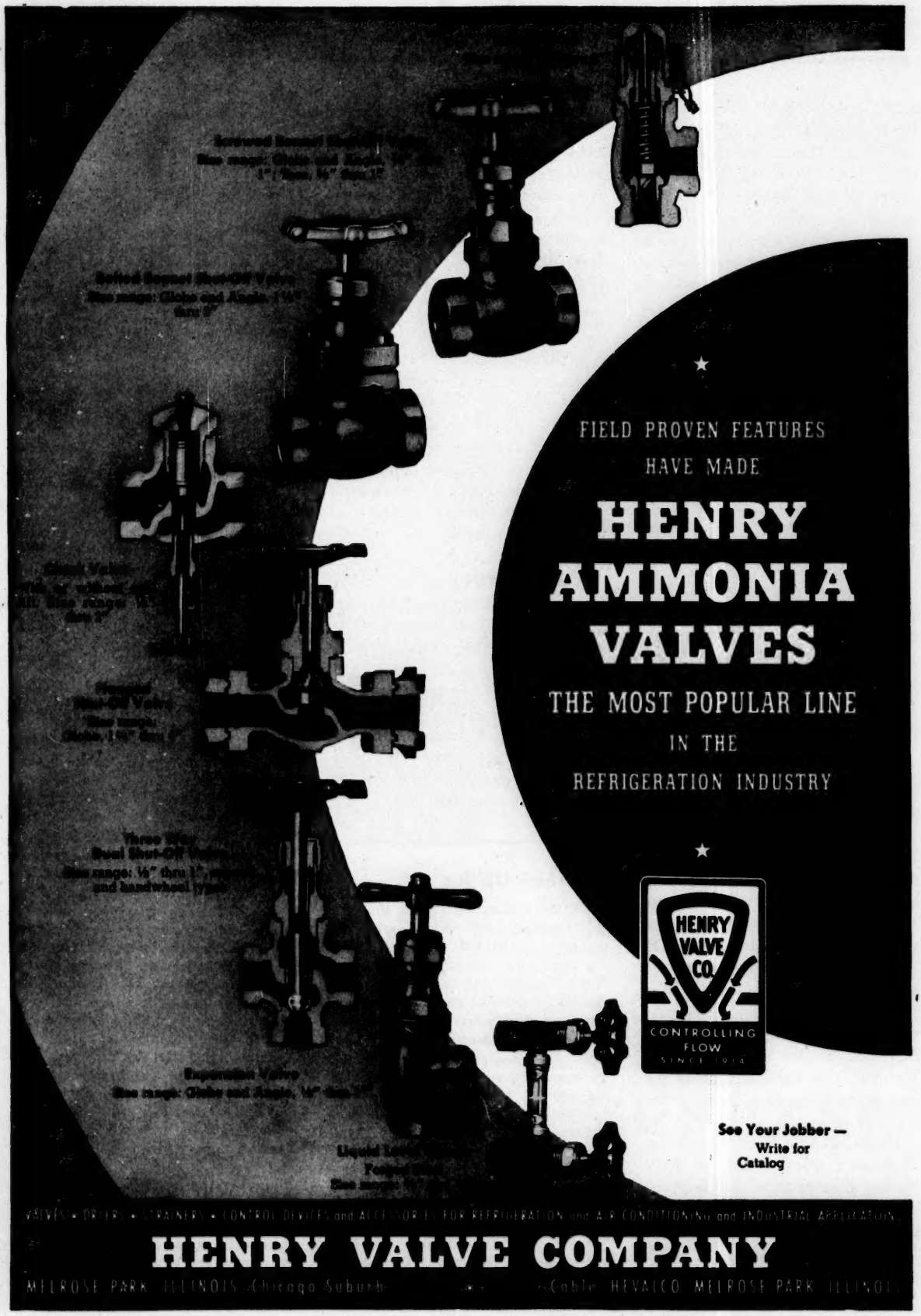
From the June, 1893 issue of ICE AND REFRIGERATION

AS READERS of ICE AND REFRIGERATION have by this time no doubt concluded, the editor is of the firm conviction that manufactured ice may be stored and held for future consumption as surely as natural ice is held from the cutting season of midwinter to the day of its consumption in midsummer. We are quite aware that some ice men hold that this cannot be done, and that many learned columns of theory have been printed in argument for the negative side of the question; yet we are by no means satisfied that the negative is the true end of the discussion. Indeed, our previous correspondence as published herein from time to time in the past few months all goes to show that manufactured ice can be stored profitably; and the only difference of opinion seems to lie in the matter of detail.

MONEY can be borrowed on butter, eggs, cheese, chickens, and farm products of all the kinds that will keep, as easily as on diamonds and watches. Not only is this so, but there is a great deal more money loaned on ordinary farm products than in all the pawn shops in New York. This is a business which is growing every year and which has now assumed such an enormous proportion that it makes up a large part of the discount line of several banks.

The EXHIBIT of apples, pears and grapes made by the State of New York at the World's Columbian Exposition, Chicago, is a most conspicuous and interesting feature, not alone because it is by far the greatest in point of varieties of those fruits shown, but because as a whole it is a signal triumph for mechanical refrigeration, every apple and bunch of grapes shown having been held from the picking season to this time in cold storage. The extent of the exhibit is indicated by the statement that it has contained 110 varieties of apples, fourteen of winter pears and a lesser number of grapes.

THE MILWAUKEE Cold Storage Company had completed a new cold storage warehouse the largest in the State of Wisconsin. The structure was five stories and basement, with frontage of 145 feet on Reed Street, and a depth of 140 feet.


FIELD PROVEN FEATURES
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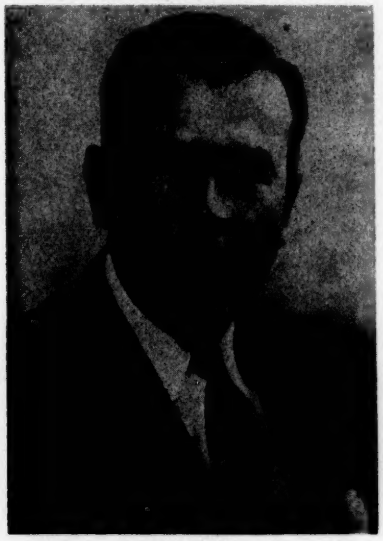
American Warehousemen's Association

Sixty-second annual Convention held at Nation's Capital Draws Record Crowd of Warehousemen. Prominent Guest Speakers and Panel Discussions Hold Interest at All Sessions.

OVER 900 refrigerated and merchandise warehousemen, members of their families and guests were on hand when the American Warehousemen's Association opened its 62nd annual convention at the Shoreham Hotel, Washington, D. C., Sunday, May 17. The four-day meeting was one of the largest gatherings in the Association's history. Meeting jointly were the two AWA Divisions, the National Association of Refrigerated Warehouses, and the Merchandise Division. Also, at the same place, the Refrigeration Research Foundation held a three-day meeting, beginning Friday, May 15.



Wilford S. Long, St. Louis, Mo.
President, AWA

Highlighting the meeting were guest speakers Secretary of Agriculture Ezra Taft Benson; Rep. Walter Judd (R-Minn.); Senator Harry F. Byrd (D-Va.); Roger Fleming, secretary-treasurer American Farm Bureau Federation; and Val Petersen, Federal Defense Administrator. Other speakers were M. J. Hudtloff, director Transportation Warehousing branch, Production and Marketing Administration USDA; and Harold K. Osgood, director Warehouse and Storage Division, Defense Transportation Administration.

Another feature of the warehousemen's meeting was a special ladies program, which included sightseeing tours, embassy tours and fashion shows.

The entertainment program opened Sunday evening with a get-acquainted party with refreshments, sponsored by Washington, Baltimore and Philadelphia AWA members. Tuesday noon the "First Timers" luncheon was held, with Secretary of Agriculture Ezra Taft Benson as the featured speaker. Tuesday evening the annual family party was held on the Shoreham Terrace, at which the warehousemen had as their guests their representatives and senators in Congress. Wednesday evening the president's banquet, preceded by a reception was held at the Statler Hotel. Thursday noon, a group luncheon was held, at which Rep. Walter Judd (R-Minn.) was guest speaker.

A feature of the various AWA sessions were newscasts, giving up to the minute reports on the latest news developments. These were presented by Bill Shadel, C.B.S. Radio Correspondent, Bill Costello, C.B.S. Radio White House Correspondent, and Bill Downs, C.B.S. Radio Correspondent.

A W A Officers for 1953

President, Wilfred S. Long, St. Louis, Mo.
Vice-president, A. B. Efroymson, Cleveland, Ohio
Treasurer, Wm. A. Morse, Minneapolis, Minn.
Secretary, Wm. Dalton, Washington, D. C.

Merchandise Division Officers

Officers for the coming year were elected by the Merchandise Division as follows:

President, Irving S. Culver, San Francisco.

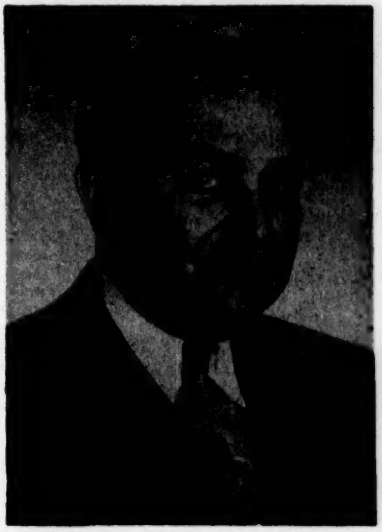
Vice-president, Raymond King, Syracuse, N. Y.

Treasurer, Malcolm A. Buckley, Philadelphia.

Executive Secretary, Wm. Little, Chicago.

Opening General Session

The opening general session Monday morning, following routine convention business, was featured by outstanding addresses on the national picture by Jack T. Johnson and Val Petersen, both of the Federal Civic Defense Administration.



J. L. Gagini, Omaha, Nebr.
Past president, AWA

The session was opened by President J. L. Gagini followed by an invocation by the Reverend Frederick Brown Harris, Chaplain of the United States Senate and singing of the National Anthem and other songs by Miss Iris Ann Fitch.

The welcome address was delivered by Jerry P. Johnson, a native son of Washington, D. C. Amid good natured hilarity Mr. Johnson was led to the rostrum by two stalwart traffic officers, followed by Wm. J. Cunningham, deputy chief of the Metropolitan Police Department. Mr. Johnson remarked that he was one of the few people living in Washington who had been born and raised in that city. He reminded the audience that the National Government is their government and that its actions are largely in their hands. Deputy Chief Cunningham responded also with a welcome to Washington.

Greetings from Canada were expressed by Hartford H. Perry, Winnipeg, president of the Canadian Warehousemen's Association. Mr. Perry called attention to the tremendous development of mineral resources and refining in Canada during the last decade and said all Canadians are gratified at being able

A. B. Efroymson, Cleveland, Ohio
Vice-president, AWA

to be associated with the United States in the rapidly developing industrial and economic advancement.

Report of General President

A report covering achievements of the Association during the past year was presented by General President Gagini. Mr. Gagini said that real progress has been made in the affairs of the association and this had been made possible by the conscientious work of the Washington staff. Among some of the more important accomplishments, he listed the following:

An outstanding convention designed to present increased knowledge, new ideas and real progress in all phases of warehousing.

The executive office has kept close watch on legislative developments affecting the industry, including effective action toward obtaining decontrol of OPS regulations and regimentation.

Continued public relations with customer groups of the warehousing industry has been effected with increasing success.

Association headquarters act as a clearing house for providing warehousing information to government agencies and other groups.

The annual publication of the Yearbook with convention proceedings and other information provides a valuable and lasting service.

Concluding Mr. Gagini commented that the association membership has now grown to 935, the largest in its history. The association is in good hands, he reminded the members, and it provides a source of satisfaction and security for all warehousemen.

The Nation's Capital

Representing the business interests of Washington, Clarence A. Arata, executive director Greater National Capital Committee of the Washington Board of Trade extended greetings and said he hoped they would enjoy their stay in the city which, he said, with its beautiful buildings and wide streets provides a symbol of the greatness of America.

The Civil Defense

Dr. Jack T. Johnson, assistant administrator for training and education, Federal Civil Defense Administration presented a realistic picture of the civil defense status. The program, he said, ranges from the military establishment, through the foreign policy of the government, to hometown defense. We must recognize, he said, that the Soviet policy points toward complete communist imperialism and domination of the invidiual whereas the American concept is individual freedom for all.

Russia is now equipped militarily and economically for all-out war. From the defensive point of view the United States has the potential equipment to resist any attack but in spite of this the enemy could get through with enough bombers to inflict serious damage. In this situation local damage control is necessary as part of the resistance and this would force the enemy to increase the force of his attacks.

Such a war, he said, would not be fought on far flung battlefields but right here at home, thus civilian protective means are very important. Each person should know just what to do in any emergency.

If any one or more of our key cities are attacked, plans are already made for adjoining cities to come to the rescue with fire equipment, doctors and nurses. Upon the adjacent rural areas will fall the burden of caring for refugees. And upon industry will fall the responsibility of looking after the safety and protection of their plants and personnel.

New Look in Washington

A cheerful picture of the progress made under the new administration in Washington was presented by Val Petersen, Administrator Federal Civil Defense Administration and formerly Governor of Nebraska.

Mr. Petersen said it was encouraging to note a return to the basic concept of the three branches of government, executive, legislative and judicial having coordinate responsibilities and authorities. The President, he said, has full respect for such coordinant responsibilities, which is the basis of his refusal to dictate to other branches of the government. If drastic, decisive action becomes necessary he will take such action but not until it becomes clearly necessary.

W. A. Morse, Minneapolis, Minn.
Treasurer, AWA

The program of frugality, he said, is not going forward as some would like to see it, but steady progress is being made in spite of tremendous difficulties. Balancing the budget and reducing taxes is a necessity to restoring the government to a position of financial responsibility.

Another important phase is the president's firm dealing with Russia, in which he now has the initiative. One result of this is that Russia no longer can use the United Nations as a sounding board without a strong rebuttal from Senator Lodge. Another important trend is the recognition of all occupational groups on an equal level, whereby the administration is not pro labor, nor pro-business nor pro-farm, and will not acknowledge domination from any group.

First-Timers Luncheon

The First Timers Luncheon Tuesday noon included both the Refrigerated Warehouse and Merchandising divisions and some 83 new members were guests of the AWA at this occasion.

The headline feature of this luncheon was an address by Ezra Taft Benson, Secretary of Agriculture.

Mr. Benson told the warehousemen that they play an important part in the free enterprise system of America and their influence will help counteract those tendencies that would tear it down. He said the Department of Agriculture appreciates their contribution to the food industries.

At this time, he said, we need to examine the government in all its new policies. The question of subsidies, particularly in the farm program, is a very difficult one and he urged them all to follow the principle that what is best for the American people is best for the country as a whole. It is a newly established principle, he said, that government should not do for the people what they can do for themselves. This is old fashioned philosophy, he said, but he believes it is as sound now as it ever was.

In spite of the numerous and complex problems involved in the farm program he said he believes that there is enough wisdom to work out a solid and reasonable program that will serve all the people as well as the farmers themselves. They have been cooperating in this problem and with the further cooperation of business interests he believes that a solid and reasonable and lasting farm program can be developed.

Secretary of Agriculture, Ezra Taft Benson speaking at first-timers' luncheon Tuesday.

President's Reception

At the annual president's reception Wednesday evening at the Statler Hotel, the feature event was an address by The Hon. Harry F. Byrd, United States Senator from Virginia.

Senator Byrd said that the National government now has a group of very able men and they are doing an important work. What we in the government service do and what you as citizens do in the next four years will decide the future of the country. Our best insurance against a world war is the strengthening of our economic condition. We are gradually turning away from regimentation and controls by the government and turning more and more toward the free enterprise system, where individual responsibility is encouraged and made necessary.

Our government must be made solvent. It approaches insolvency when the dollar constantly becomes cheaper as it has been doing for nearly twenty years. During that time the budget has been balanced only once. Although public spending of money is firmly entrenched, we can balance the budget if there is a will to do it. The program inaugurated by President Eisenhower is on the right road to accomplish this. We must balance the budget and get the country on the basis of the incoming equaling the outgo. The people must abandon the idea of government doing for them what they can do for themselves. We need better business management in the military and all other government bureaus which have the spending of money.

Another feature of this dinner was the presentation to Mrs. J. L. Gagini, wife of the retiring president of AWA with a beautiful silver service.

At this time also The Man of the Year Award was presented by The AWA to Senator Byrd for his sincere work for better government with the adoption of a sound fiscal policy.

AWA Board of Directors meet Sunday to outline final plans for the convention.

Final Session

The farewell luncheon of AWA was held in the Terrace ballroom of the Shoreham Hotel. At the meeting following the luncheon, President Gagini presided and introduced the officers and distinguished guests.

Resolutions were presented and adopted expressing appreciation to the convention committee, the speakers and others who had helped to make the convention a success.

New officers were elected as follows: President, Wilford S. Long, St. Louis, Mo.; vice-president, A. B. Efroymson, Cleveland, Ohio; treasurer, W. A. Morse, Minneapolis, Minn.

The headline feature of this session was an address by Rep. Walter H. Judd (R-Minn).

Mr. Judd called attention to the fact that this is a time of transition in Russia, as well as the United States. Conditions now in the United States are different from ever before

(Continued on page 48)

Annual Meeting of Refrigerated Warehousemen Panel Discussions and Headline Speakers

THE annual convention of the National Association of Refrigerated Warehouses opened Monday afternoon, this session being devoted largely to convention business. Following the trend of the last few years the remaining sessions were made up of panel discussions, interspersed with headline speakers, all covering practical problems of everyday warehousing.

R. M. Conner, Chicago, Ill.
President, NARW

These panel discussions covered cold storage doors, cold storage floors, ceiling heights, the defense picture, attracting and holding employees, cost finding, what the customer expects of refrigerated warehousemen, youth wants to know, operations clinic, If I had it to do over, office procedure and problems.

The custom of showing industrial films of general interest was followed again this year as the opening number at the Tuesday, Wednesday and Thursday morning sessions. Tuesday morning was shown the processing and marketing of orange concentrate by Clinton Foods. Wednesday morning the story was told of a supervisor who found his human relations all awry and how he corrected them. Thursday morning an interesting safety film on the operation of fork trucks was shown by The Clark Equipment Company.

A number of associate members and others responded to the association's invitation with exhibits of their products. Among these were: Carrier Corp., Syracuse, N.Y.; Minute Maid Corp., New York; Freezer Equipment Sales, York, Pa.; Pur Air Division, Barneby Cheney Co.; Columbus, Ohio; Frick Company, Waynesboro, Pa.; Lewis Shepard Products, Baltimore, Md.; Armstrong Cork Co., Lancaster, Pa.; Pittsburgh Corning Co., Pittsburgh, Pa.; York Company, York, Pa.; Owens-Corning Fibreglas Co., Toledo, Ohio; Insulated Clothing Mfg. Co., New York; Snow Crop Frozen Foods, Dunedin, Fla.

Other exhibits in the lobby of the hotel were by the Chamber of Commerce of The United States, Department of Defense and the Federal Civil Defense Administration.

Opening Session

The first session was opened and directed by A. B. Efroymson, president of the National Association of Refrigerated warehouses.

As treasurer, C. B. Hart reported on the finances of the association. Considerable improvement was shown in the income last year, the present balance at the end of the year amounting to $60,456.62.

The annual president's report was presented by A. B. Efroymson, Mr. Efroymson said that since the New Orleans Convention last year, much has been accomplished for the good of the industry. All details could not be reported, he said, but he did present some of the more important highlights. Mr. Efroymson's report is published in this issue as the lead article of the Refrigerated Warehousing Department.

NARW Officers for 1953

President, R. M. Conner, Chicago, Ill.

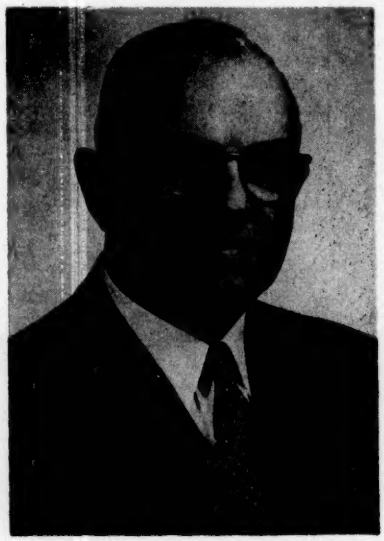
Vice-President, M. W. Young, San Francisco, Calif.

Treasurer, W. W. Wilson, Brooklyn, N. Y.

Executive Vice-President, Wm. Dalton, Washington, D. C.

Secretary, Joseph Colquitt, Washington, D. C.

Executive Committee: The Officers and A. B. Efroymson, Cleveland; W. C. Hudlow Jr., Chattanooga; F. D. Newell Jr., Minneapolis; John K. Dozier, Houston; J. W. Wilkerson, Kansas City; E. M. Neylon, St. Louis; Richard Doncaster, Holly, N. Y.; C. F. Swanberg, Seattle; Charles E. Adams, Jersey City; R. C. Muckerman, St. Louis.



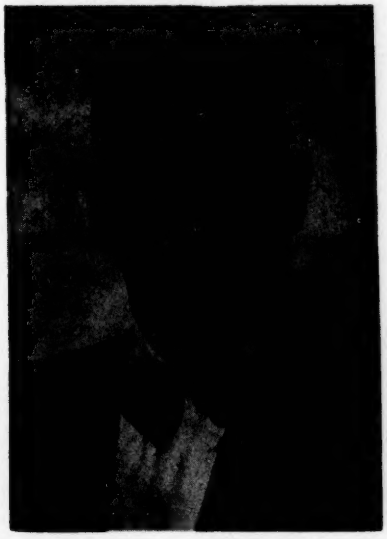
M. W. Young, San Francisco, Calif.
Vice-president, NARW

Executive Vice-President Reports

In his annual report Executive Vice-President Wm. Dalton took as the sub-title of his remarks, "If I were a warehouseman." Under such an assumption he said, he would recognize that in the economic squeeze we have today it is necessary to revise costs and take a close look at operations. Wages are high and they are not coming down. So we will have to do what we can with the money available.

A possibility in the present situation is that meeting demands for expansion now may develop into excess space later. It is important therefore to determine possible future needs through research. Any

service rendered is worthy of being paid for. Debt reduction now is important because it affects credit rating. Financial reserves have always been necessary in business and they are important now.



W. W. Wilson, Brooklyn, N. Y. Treasurer, NARW

The warehousing industry is changing back from a seller's to a buyer's market. As each additional cubic foot of space is added, when crop failures beset a certain commodity industry, when economic factors stack up against high occupancy, then we will be in a buyer's market again. So what happens? Some may endure the hard times on the ground that lean years are a part of life. But there are others who will remember that the buyer is always a man to cultivate. There wil come a day when a little good will is a savings account that can be drawn for a rainy day.

Keeping informed is another necessity, in economics and public relations, the situation in Washington, in state capitals, in city halls and internationally. The National Association of Refrigerated Warehouses is devoted to keeping its members informed on all these phases and to looking after the welfare otherwise of individual members in Washington. The association now has increased responsibilities to serve the industry more than ever before, he concluded, and it is dedicated to the task of fulfilling these responsibilities.

The Poultry Industry

Dr. Cliff D. Carpenter, representing the Institute of Poultry Industries said the poultry industry is now in a period of great changes; for instance there has been a great increase in poultry production and it is our duty to see that these products are properly handled. The poultry industry is alive to its needs and he asked for full cooperation from the warehousemen.

The Defense Program

Harold K. Osgood, Director Warehousing and Storage Division Defense Transportation Administration, talked on the part of the warehousing industry in this program.

The Defense Transportation Administration, he said, is charged with the responsibility of transporting and warehousing in coordination with other government agencies, and this includes all perishable goods. They are also concerned with necessary expansion now to take care of requirements, realizing that this expansion must be economically feasible from the standpoint of the warehouse making such expansion.

The attempt to project future requirements, with any degree of accuracy is more or less futile, but it it necessary in the present situation. However some classes of food do indicate an increased need for storage, and increasing population also points in the same direction. The production of frozen foods shows an increasing need for storage space, but it is expected that by 1955 frozen food production will have leveled off.

The Legislative Picture

J. P. Johnson, Washington, chairman of the legislative committee reported that a number of proposed bills are now before congress. While all may not become laws, the time to exert influence either for or against them is at the time of their inception and he said the committee is following developments very closely. Among the more important bills cited were the following:

The Senate Banking Committee voted to give the President authority to freeze wages, prices, and rents, for 90 days in case of emergency until June 30, 1955. The association has filed objections.

A bill to ban expenditures in excess of revenues except in time of war or a grave national Emergency, now before the House Government Operations Committee.

The usual bills prohibiting discrimination in employment because of age have been introduced and are before the House Committee on Education and Labor.

A bill to clarify the right of sellers to engage in competition, in good faith, meeting the equally low price of a competitor is now before the House Judiciary Committee.

"A bill to further encourage the distribution of fishery products and for other purposes," is now before the House Committee on Merchant Marine and Fisheries. This bill is correctly interpreted to be a research and marketing administration and CCC in the making.

A bill to restore the authority of Food and Drug Administration officials to make inspections of food plants, warehouses, is before the Senate Committee on Labor and Public Welfare.

A bill to extend Foreign Trade Zone privilege to qualified public warehousemen is now before the House Committee on Ways and Means.

Bills dealing with the labor program have been introduced and hearings are now being conducted on such legislation as refers to the Taft Hartley Act by both the Senate and House Committees on Labor.

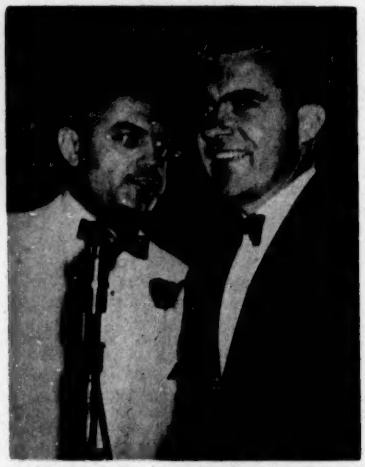
Plans have been submitted by the President to reorganize certain functions of the Department of Agriculture, Executive Offices of the President, The Department of Justice, Export-Import Bank and the Secretary of Defense staff.

Wm. Dalton, Washington, D. C. Executive Vice-pres. NARW

Many bills have been introduced with respect to the Social Security program. A Subcommittee of the House Ways and Means Committee is making a comprehensive study of the entire Social Security problem. The usual bills to provide a program of national health insurance have been introduced and are before their proper committees.

No action has been taken with respect to taxes to date although many bills have been introduced to equalize or reduce taxes. A bill to reduce the individual income tax has been approved by the House Ways and Means Committee.

Two bills amending the Fair Labor Standards Act of 1948 to establish $1 as the minimum hourly wage and one bill to establish $1.25 as the minimum hourly wage have been introduced to the House Committee on Education and Labor.



Bill Dalton, executive vice-president of NARW briefs Vice-President Richard M. Nixon on the program. The Vice-President and Mrs. Nixon dropped in on the president's reception to greet the delegates.

Mr. Johnson announced that the Executive Committee of NARW had passed a resolution approving the Uniform Commercial Code on the ground that it would be an improvement over the present laws and regulations covering warehousing. The State Warehouse Act, to which the association had objected, is believed dormant.

Report of Cold Storage Advisory Committee

A report of the Cold Storage Advisory Committee was presented by Paul B. Christensen. The committee held six meetings during the year, at which recommendations were made to the department of Agriculture. Slides were shown listing the projects recommended to the Department and those that had been activated by the Department and recommended for expansion, under the following classifications: vegetables, general, frozen foods, fruits, poultry, engineering, temperatures and humidity, locker plants, farm and home freezers, adjuncts to refrigeration, packaging, dairy and miscellaneous.

One hundred projects were recommended and many of these have been activated. To carry on this work, between a million and a million and a half dollars are being spent by the Department. Recent recommendations have given more recognition to the technical phases of investigation. The attitude of the Department of Agriculture is well expressed, he said, by Secretary Benson who declared that as the number of people in Agriculture decreases, new knowledge is constantly needed.

Cold Storage Doors

The Tuesday morning session was opened with a panel discussion on cold storage doors directed by Kenneth Stapleton, Chicago, assisted by J. F. Meagher, Baltimore; F. D. Newell, Jr., Minneapolis; Warren Wilson, Philadelphia; M. W. Young, San Francisco.

On the question of mechanical or manual devices for opening or closing doors, mechanical devices have some advantages such as opening or closing for fork trucks. What is needed here is a light but rigid door, with flaps and operated by compression. A number reported use of heated gaskets to prevent freezing. In regard to overlapping or infitting doors the preference seemed to favor the overlapping type.

Air conditioned vestibules have been installed in a number of houses and they have generally been satisfactory. In hot weather especially they are desirable as a means of retaining cold in freezer rooms.

For door seals and gaskets, sponge rubber inside and hard rubber on the outside was reported satisfactory.

Cold Storage Floors

A panel discussion on cold storage floors was directed by A. W. Oakley, Jersey City, assisted by Nils Bernz, New York; Raymond Davis, Dallas; Frank Prusa, Cleveland; and Paul Vollmer, Chicago.

For concrete floors, it was stated, there are special topping preparations that provide a good wearing surface. These should be made up for different temperatures and put down exactly as specified.

For loading and unloading docks, some have used steel plates countersunk to level of the floor. Patching of concrete floors is made more difficult by the adverse effects of acid and brine.

Considerable discussion was devoted to the heaving of floors caused by freezing underneath. Insulation apparently was not the answer since some insulated floors after several years have heaved. A moisture seal is not desirable because it allows moisture to build up and freeze and eventually cause heaving. Answerter heaving one member said they tunneled under the area, let the floor down to the original area, braced it and left the tunnel open. Another reported that in a room 60 x 80 feet the floor heaved from one to two feet. They drilled a series of holes through the floor and into the ground underneath and inserted heating coils in pipes. This brought the floor level back to normal within three months.

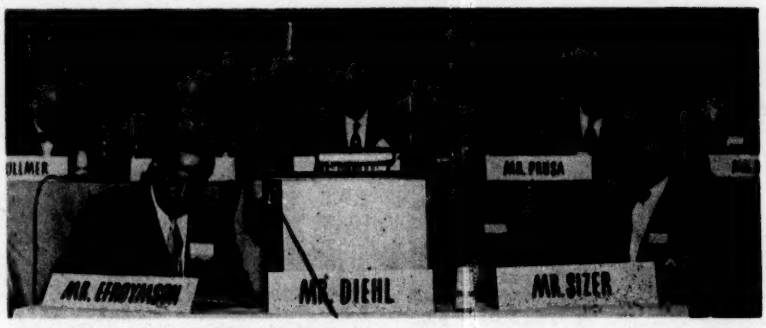
In this connection Dr. Diehl announced that this subject will be investigated, in cooperation with The Refrigeration Research Foundation at the University of Minnesota. It will be a field study, integrated and combined with laboratory work.

Ceiling Heights

A panel discussion on ceiling heights was directed by Lowell Kern, Portland, Ore., assisted by Paul Burrill, Boston; Wm. Giacomazzi, San Jose, Calif.; J. C. Irwin, Kansas City; Charles Martin, Nashville; C. M. Smith, San Antonio.

A member of the panel pointed out that the desirable ceiling height depends upon what stacking height is desired and this is complicated by the fact that some products can be piled higher than others. Some commodities cannot be palletized, requiring manual stacking, this limits the stacking height to 6 or 7 feet.

Refrigeration costs the same at the top and this makes it necessary to fill as near the ceiling as possible. One difficulty of high ceilings is the necessity of high piling which cannot be done with all commodities. Shell eggs, butter canned goods, and other well packaged products do lend themselves to high stacking. One warehouse stacks 24 feet, and another 20 feet. High ceilings reduce cost of construction, but unless all the space



Panel session on cold storage doors at Tuesday morning session NARW.

is used it might be uneconomical in the long run.

One warehouse reported a height of 12 feet which has proven quite satisfactory, since it permits stacking with a small lift truck. Another has 14 feet but would like now to have 16 feet. You can't build for a particular product, this warehouseman said, but have to take what is offered and future demand cannot be foretold.

For high ceilings in which stacking heights do not use all the space, mezzanine floors pallet width, was suggested as a possible way of using some of the upper space.

It was pointed out also that insurance rates increase with higher stacking, and some insurance underwriters require a space of three feet below the ceiling. Sprinklers will penetrate only about 12 feet.

Storage Operations

Problems arising during the year were discussed by M. J. Hudtloff, director of the Transportation and Warehousing branch U. S. Dept. of Agriculture. Mr. Hudtloff said he appreciated the cooperation received from the industry but said there were some areas of differences.

Regarding the question of bonding, he said there had been some losses which made it necessary to tighten up on the financial standing and bonding requirements. To this the association had objected and after a series of committee meetings new bonding requirements were passed which eliminate most of the objections.

Contracts have been revised also to eliminate some of the objectionable features, and these new contracts became effective May 1.

In the new warehousemen's guide book, these generally agree with warehouse practice although a few revisions have been made.

The Defense Picture

A panel discussion on the defense picture today and tomorrow was directed by Charles E. Adams, Jersey City, assisted by V. O. Appel, Chicago; George Baxter, office of Quartermaster General, Washington; Harry Tolliver, Department of the Navy.

Prospects for storage business from the armed forces will be about the same as last year, depending on military developments. Last year the total business amounted to about six million dollars.

To the question of whether any new refrigerated warehouse construction is planned by the government, the answer was "yes, but only in places where it is clearly shown that civilian facilities will not meet the needs." In most such cases, it will be only small construction where civilian facilities are not adequate.

Regarding government support of new facilities by private industry, the government is concerned with the economic situation but the primary consideration is military. It is considered necessary to have storage facilities where and when needed and that is considered as the basic motive, counterbalanced with the policy that new construction will not be made unless considered a military necessity.

In regard to specialized installations, most operations are designed for storage of a wide range of commodities, and warehousemen believe they know how to provide facilities for any commodity, and that it would be uneconomical for the government to build its own facilities. The one-crop warehouse has a difficult occupancy problem, and the government would have the same difficulty.

The duPont Business System

W. F. Allman of the du Pont Company gave an illustrated lecture, a summary of lectures given to their employees by the company. He described the organizational set up, including employee participation, basis of American business organizations and in general how big business operates.

The Labor Outlook

Lambert H. Miller, chief counsel National Association of Manufacturers discussed the present labor outlook. Extensive hearings on the subject have been held at Washington, he said, but no bills are ready. In hearings on the Taft Hartley law, the unions object to the injunction provisions, the open shop, and asked for more leeway in secondary boycotts. It is expected that this law will be revised to meet part of the demands of labor, but it is not expected that it will be materially weakened from the standpoint of business. This situation is complicated by the drive of union interests for outright appeal, based on potential rather than actual unfairness.

The present trend is for the federal government to turn back to the states and local governments the handling of local labor relations, and this probably will be included in any new legislation. This will be a rather sweeping change. Another change in the future, he said, is that labor procedures will be under the law, rather than from the steps of the White House.

Attracting and Holding Good Employees

A panel discussion on attracting and holding good employees was directed by W. W. Wilson, Brooklyn, assisted by A. W. Beall, Santa Clara, Calif.; Harry Foster, Cincinnati; John Kiefe, Bridgeton; Wm. J. Laack, Brockport; W. E. Ready, Indianapolis; A. F. Versen, St. Louis.

From various areas it was reported that employee relations programs include staff meetings, Christmas and other bonuses, office help is paid on comparable scale of the organized help, foremen training conferences, special attention to personal problems, incentive pay, hospital and other forms of insurance. In this connection it was pointed out that the warehouse industry generally has health and welfare plans, instigated by union demands. A suggestion was made that the association give consideration to a group pension plan specially adaptable to the needs of small companies.

It was stated that any employee training program should stress the fact that employees are working for the company and not for the union, instead of reverse thinking as is too often the case. In wage negotiations, it was suggested that the warehousing industry as a whole, instead of local conditions, be made the basis.

At the close of this discussion formal recommendation was made that the association add a Labor Committee, and the chairman of the meeting said this would be referred to the Executive Committee.

Agriculture and The Refrigerated Warehousemen

Roger Fleming of The American Farm Bureau Federation talking on Agriculture and the refrigerated warehousemen emphasized the interdependence of the two industries and made a strong case against government regimentation and controls.

The allocation of resources, he said, is best served by the competitive system. Controls are narcotics which dull the senses of the people affected. The policy of the President is to bring about a balance of goods and money which will make controls unnecessary. As farmers and warehousemen it is to our advantage to make this free enterprise system work.

The need for price and wage controls cannot be cured except by normal production and distribution. Government price supports will neces-

sitate government control and farmers do not want this. They do not want political interference in economic problems which must be solved on a buisness and not a political basis. The most important thing for farmers and other business men to do now is to stabilize the dollar. We are confident that they can work out the answer to this and have the courage to carry through in their plans to create such a condition.

Cost Finding For Refrigerated Warehousemen

A discussion of cost finding for the refrigerated warehousing industry was presented by Wm. C. Baker, Chicago, reporting on the work of a cost finding committee of the association. Mr. Baker said it was a truism that a business house needs to know costs so that it can operate sucessfully and to do this it needs to analyze revenue and expenses to know how to anticipate profits.

An elaborate report on the subject, developed by the committee was distributed to members of NARW. The report gave detailed figures on all phases of refrigerated warehouse operations and will serve as a valuable guide on the subject.

What the Customer Expects of Refrigerated Warehousemen

An interesting panel discussion on what the customer expects of refrigerated warehousemen was presented by a panel representing various segments of the frozen foods industry. This discussion was directed by A. E. Stevens, vice-president of the Minute Maid Corp.; assisted by Joseph Gaudio, president of the National Association of Wholesale Frozen Food Distributors; Richard Gelin, Birds Eye Snider Division General Foods Corp.; H. G. Hayman, John H. Dulaney & Son; R. E. Vincent, Snow Crop Marketers; Harry Schauffler, executive director National Wholesale Frozen Food Distributors.

Illustrating the rapid growth of the frozen foods industry it was stated that in 1942, 150 million pounds had been produced as compared to 900 million pounds in 1952. Production of orange concentrate had increased from none in 1942 to 624 million pounds in 1952.

A representative of the distributors said they felt that the frozen foods people from their years of experience had learned how these foods should be handled in storage and they thought the warehousemen should give more recognition to this knowledge, and the special needs of frozen foods. If warehouse costs are going up, so are theirs. They have had to adjust their costs step by step, and they ask the warehousemen to go along with them. It was stated also that the warehouse industry should keep its facilities ready to take care of the increasing volume.

Delays in unloading causes many hours loss. An instance was cited of one truck having to wait three days. Such waiting results in increased costs and creates friction with the carriers. No remedy was suggested but it was felt that the problem was one for the warehousemen to solve, because each warehouse layout is different. Also delays in getting delivery receipts to customers was criticized because a sale is not completed until the customer is billed. A warehouseman answered that this problem is aggravated by lack of information as to when a shipment will arrive.

In regard to temperatures, the larger packers supply the warehouse with this information but others depend on the warehouse and in many cases the warehouse does not supply information regarding losses due to temperature deficiency promptly.

The suggestion was made that warehousemen should do something about small lot deliveries, for which breakup costs are considered too high. Also delivery tickets should be standardized of which there are now a great variety in size, color and data. Daily transmission of delivery tickets would be a big improvement over present practice of waiting four or five days.

Another representative of the distributors pointed out that production of frozen foods is increasing rapidly and this has an important impact on warehousing. As an instance of the changing picture in 1948 there was more cooler than freezer space, but by 1954 it is expected that use of frozen space will more than double that of coolers. The warehouses should prepare for this new business, he said, and let their customers know what service they have.

Youth Wants to Know

In a panel discussion on "Youth wants to know", the usual procedure of the panel calling for questions from the floor and answering them was reversed by young warehousemen asking for answers to questions from the floor. The discussion was directed by R. M. Connor, Chicago, Vice-president of NARW, assisted by James Brooks, Birmingham; Peter Cooper, Baltimore; Robert Cooper, Baltimore; Wm. Giacomazzi, San Jose; Reed E. Smith, Oakland; A. F. Warner, Washington, D. C.; Warren Wilson, Camden.

Regarding the best type of construction, whether one or multi-story, it was stated, depends upon what is desired, the space available and the amount of money available. The one-story idea is popular now, but there is some question as to whether this will continue to prevail.

In regard to negotiable or non-negotiable receipts for products stored, it was stated that under the uniform receipts act requirements are different in each state. While both kinds are in use; generally some form of non-negotiable receipt seem to be desirable.

A question was asked as to automatic controls in the engine room, as to how successful completely automatic controls had been. The answer was that with high speed compressors and other modern equipment in large plants, it is almost necessary to have the attention of an operating engineer but most operating engineers need more information about the newer high speed machines and also the automatic equipment.

When products are received at a higher temperature than they should be, but not at the defrosting stage, what is the lowest temperature accepted before it is spread before defrosting? When product is above 12 F the customer is asked for instructions; below 12 F it is accepted for storage.

How should damaged merchandise be separated and consolidated and should a charge be made? Damaged merchandise is always separated and stored under a different lot number and a charge made. A difficulty in this however is that some independent truckers are not financially responsible.

Operations Clinic

A panel discussion on warehouse operations was directed by J. J. Gallery, Boston, assisted by John K. Dozier, Houston; William F. Flieg, Evansville; Gilbert J. Stecker, Louisville; W. D. Stella, New Orleans; J. K. Storer, New York.

A question as to which type of fork truck, sitdown or standup, is preferred was answered by the suggestion that the standup type has definite advantages, making it easier for the operator to get on and off, run backward, etc.

The accepted height for truck platforms is between 48 and 50 inches. For the smaller trucks hydraulic ramps are used by some warehouses.

A new type of mechanical refrigerator car provides warehousemen with an opportunity of holding these

cars for longer periods than the older type. This has created a problem with the railroads and it is one which needs to be adjusted.

There is some complaint that some containers do not stand up as they should, thus creating handling difficulties. This was cited as a problem for NARW and reports on containers causing trouble is needed as a basis of the study.

On what can be done to prevent tipping of high stacks, the answer was to use box pallets, reversible pallets, and eliminate soft packages.

A complaint that shippers fail in many instances to furnish manifests of shipments in advance, or only partial manifests, was answered by suggesting that the information may be obtained by contacting the shippers.

A frozen food packer said his company makes a practice of notifying the warehouse by wire when a shipment is made and when it is expected to arrive. Shipments from warehouse to warehouse is the responsibility of the forwarding warehouse.

Figures on the life of pneumatic versus solid tires for trucks were requested. There seemed to be no comparative figures available but experience seemed to favor the solid tire for indoor work because of the perishable nature of pneumatics. For outdoor work, pneumatics seemed to be favored.

If I Had It To Do Over

A panel discussion designed for airing mistakes and changes of mind under the title "If I had it to do Over", was directed by F. D. Newell, Jr., Minneapolis, assisted by Francis Blake, Waterport; J. R. Goodfellow, Seattle; W. C. Hudlow, Chattanooga; W. J. Lamping, Detroit.

A question as to whether to use an ammonia or a brine system was answered to the effect that both have been used with entire satisfaction. Brine offers stability for high temperatures but direct expansion is preferred for low temperatures. One warehouseman reported that he uses brine only in the coolers, but others reported use in freezers also. A new plant reported that they use brine throughout except for blast freezing where ammonia direct expansion is used.

Answering a question as to what they would do differently if building a new warehouse brought various suggestions: Ceiling heights should be adjusted to the type of operation; the question of one or more floors would be influenced by the same; a combination of one and multi-floors provides a means of distributing commodities adapted to each; mezzanine floors are useful for certain products in high ceiling rooms; outside platforms would be widened to make them more adaptable to fork trucks; one warehouse has 14 ft. platforms now and if possible they would widen them to 24 feet.

Using a wing type pallet, it was stated, depends partly on condition of the floor. They are heavier but are interchangeable. Use of two-way and four-way pallets also was discussed, the four-way facilitating manual handling.

Is mechanized handling profitable for multi-story warehouses? It reduces labor costs and in some instances mechanized handling has been enforced by scarcity of labor. A machine, it was stated, will do the work of three or four men. Damage to floors and elevators is a problem in the older warehouses. Some older houses whose elevators will not carry the load of a fork truck use roller trucks in the elevators.

Office Procedures

A panel discussion of office procedures and problems was directed by Frank L. Snavely, Lancaster, Pa., assisted by Richard Doncaster, Holly, N. Y.; John Jacobson, Worcester; David Stearns, Milwaukee; Bert Veenker, Sioux Falls, S. D.

Information on a receiving ticket, it was stated, should include condition of the merchandise, temperature of the product, license number of truck, inside temperature of cars and commodity temperature. Legibility and accuracy are important for receiving tickets. The usual procedure is to call for the manifest and make out receiving ticket from that, in duplicate, typewritten, one copy sent to the warehouse superintendent and returned to be checked with the manifest. Delivery tickets are usually made out on the dock in long hand and one copy sent to the customer.

Training employees in contacting customers is provided through training courses by some companies. An efficient and pleasing voice is especially important for a telephone operator. It was suggested that the Telephone Company has available a leaflet of instructions and suggestions on telephone courtesy and personality that is valuable to operators.

On the question of using office machines it was stated that a fairly large operation is necessary to justify their use, and they must be of proper design and facilities to fit the operation. Some of these more elaborate machines are expensive but they do very good work. In large operations more than one machine is needed, but in smaller operations this depends largely on the efficiency and training of the office personnel.

The advantages of billing on anniversary or end of the month basis were discussed. End of the month billing, it was stated, creates a peak load and may delay billing on some accounts four or five days. Anniversary billing every day keeps all accounts up to date and provides better customer satisfaction. Others reported a custom of billing at the middle and end of the month.

Has the demand for extra service called for an increase in officer personnel? Clerical forces have been increased in many instances to take care of extra service, but this is not provided unless customer authorizes payment of it.

Should warehousemen abandon their own and adopt standardized forms? If the forms now being used supply all the details required, their continued use should be satisfactory; if not it would be a good idea to consider standardized forms. A California warehouseman compiled a form to meet the needs of his large customers and this has been quite satisfactory.

Regarding delivery receipts a considerable diversity was reported and it was concluded that more uniformity is needed. The warehouse must supply the information wanted by the customer and each may want different information. The problem seems to require compilation of all information required.

Resolutions

Resolutions were presented and adopted thanking the officers and executive staff for their efficient conduct of the affairs of the Association. Appreciation was expressed to all those who had prepared the business and entertainment programs of the convention.

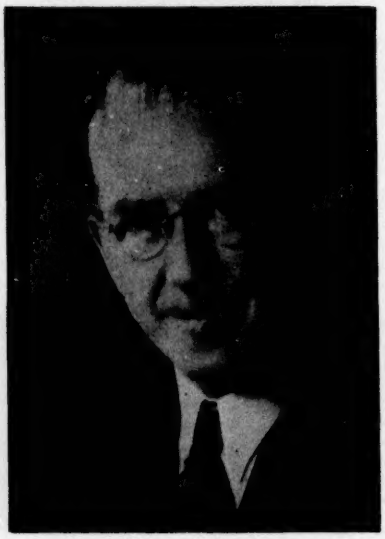
A resolution was presented by the Executive Committee and passed recommending adoption of the proposed Uniform Commercial Code on the ground that it offers a step forward in improving the laws covering warehouse operations.

"The Hoaxters"

Following adjournment of the final AWA session Thursday, a movie film "The Hoaxters," was shown. This film depicted the history of totalitarianism in Europe as well as in our own country. The factual information about actual happenings communism-wise in this country were quite startling.

Refrigeration Research Foundation – Annual Meeting Reviews Program and Plans

REFRIGERATED storage problems that have been solved and new problems to be undertaken were reviewed by the Scientific Advisory Council of The Refrigeration Research Foundation at its Annual Meeting in Shoreham Hotel, Washington, D. C., May 15 and 16. This meeting preceded the meeting of members of the Foundation on Sunday, May 17, and was a part of the NARW and AWA week of meetings that followed.



Wm. A. Sizer, Chicago, Ill.
President, TRRF

Attention was given only to problems recently solved in the Foundation's nine years of operation, rather than to earlier work. A. A. Klose, research man from the Western Regional Research Laboratory who has had a prominent part in the Foundation-aided project of semiscald vs. subscald for turkeys intended for freezing, was present and reported results.

Enough information is now available so that processors can be aided in use of the cost-saving higher scald temperatures (up to about 140 F.). Moisture loss can be controlled if drying is avoided by use of such a measure as slush ice chilling. Packaging must be adequate, and some special care is advisable in roasting. Thus much of the guesswork can be avoided. The Institute of American Poultry Industries has also aided these studies, and the poultry industry has cooperated.

Refrigeration Research Foundation Officers—1953

Chairman of Board, Dr. Samuel C. Prescott.

President, William A. Sizer, Chicago, Ill.

Vice-president, Harlan J. Nissen, Los Angeles, Cal.

Treasurer, Walter A. Kopke, Chicago, Ill.

Director and Secretary, H. C. Diehl, Colorado Springs, Colo.

Assistant Secretary, Kenneth F. Stepleton, Chicago, Ill.

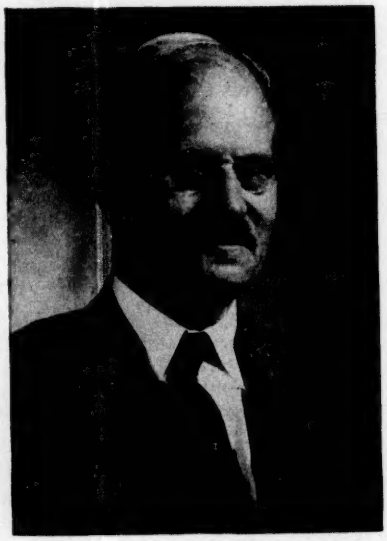
Executive Committee: William A. Sizer (chairman *ex officio*) Chicago, Ill.; Fred F. Alford, Dallas, Texas; E. M. Dodds, Kansas City, Mo.; A. B. Efroymson, Cleveland, Ohio; Herbert Farnsworth, Boston, Mass.; Walter A. Kopke, Chicago, Ill.; R. C. Muckerman, St. Louis, Mo.; Harlan J. Nissen, Los Angeles, Cal.; Garth Shoemaker, Elmira, N. Y.

Information on cold storage of lead acid batteries is now adequate for commercial development of this practice. The work of collecting and making the necessary technical information available has been done cooperatively by cold storage industry men (notably L. M. Ashenbrenner of Toledo), the Director of the Foundation, and technical groups and individuals in the battery-manufacturing industry.

Dr. J. G. Woodroof of Georgia Agricultural Experiment Station reviewed results of the studies he has directed with Foundation aid on candies, C-rations, and particularly on control of condensation on packages of candy as they are removed from low to higher temperatures. Suitable storage-practice information for wider use of cold storage for the many varieties of candy is now being applied. The National Confectioners Association, industrial collaborator in support of the studies, is aiding also in dissemination of the new technical information.

Further studies are under way in cooperation with Prof. Carl F. Kayan of Columbia University on technical phases of the condensation problem. Practical information is available for the control of condensation and for an understanding of such problems as "sugar bloom" and "fat bloom" and their control. C-rations, being packaged somewhat similarly to boxed candies, are being studied in short-term experiments in cooperation with the Quartermaster Food and Container Institute.

As a result of extended studies at the University of Wisconsin, the control of cheese mites is much less a problem than formerly. Prof. R. J. Dicke was present to discuss the results of the studies. Such information as temperatures required to kill the various species, their modes of survival and travel, and measures that assure control was presented in a very interesting manner.



Dr. S. C. Prescott, Boston, Mass.
Chairman of the Board, TRRF

Dr. E. A. Fieger of Louisiana State University reviewed the more recent findings in the study of Gulf shrimp, including his conclusions on rate of quality change in fresh iced shrimp and chemical tests on fresh shrimp for quality. He is definitely convinced that to assure preservation of the fresh sweet shrimp flavor, the period of icing should be less than a week.

Dr. H. C. Diehl, Colorado Springs, Colo. Director, TRRF

Bacterial spoilage, with off-flavor development, comes somewhat later but flavor disappears fairly early. His work on tests for quality will be discussed at the June meeting of Institute of Food Technologists in Boston.

A number of other completed studies were mentioned briefly by Foundation Director H. C. Diehl — such as the completed work at Iowa State College of storage of popcorn, work at MIT on storage of spices, short-term studies on storage of coca powder, coffees, and other commodities. Most attention was given, however, to prospective studies.

Frost Heaving Under Freezer Storage Floors

A new project thoroughly reviewed and approved by the Council (and later approved by the Executive Committee of the Foundation) is concerned with frost heaving under freezer storage floors. In developing information for a basic consideration of this project, Mr. Diehl has been aided by J. C. Irwin, engineer for United States Cold Storage Corporation. It was pointed out in the discussion that much is known about such matters as permafrost in extremely cold climates and about the relationships of soil moisture to construction.

The problem has cost the cold-storage industry inestimably large sums, however, in various methods installed for control of heaving and there is still wide-open opportunity for the development of sound economical prevention of the disaster of ruined freezer floors. The University of Minnesota will undertake the project, which will be directed by R. C. Jordan, Head of the Mechanical Engineering Department. Extensive resources of knowledge, experience, personnel, and facilities are available there for the study.

Another new project discussed by Council and approved by the Executive Committee of the Foundation on the following day is to be concerned with the development of an instrument for the measurement of humidity in refrigerated rooms. The objective will be an instrument for use in freezers as low as minus 10 F., and the leader will be Dr. C. W. Thornthwaite of Johns Hopkins University. In effect, the new project will be an advancement of Foundation-aided studies at Northwestern University on low-temperature hygrometry, under Prof. Burgess Jennings.

Prof. Jennings was present and reviewed the findings of the studies he has conducted, which have proceeded actually beyond the limits of his project. Dr. Thornthwaite has had comprehensive experience in studies of temperature and humidity relationships in storages and other locations and has developed and patented various devices for the measurement of humidity. Measurement of relative humidity in freezer storage rooms continues to be a fundamentally important matter and it is expected that the project will supply further advancement toward the goal of improved instrumentation.

Director Diehl listed additional new projects that are under consideration for future activity, including further study on specific heats of frozen foods, shrinkage of meats, storage of the components of plastics, storage of oleomargarine, odor transfer at various temperatures and relative humidities, and storage of such products as floricultural stocks, canned foods of numerous kinds, and other foods and beverages.

The urgent need for studies of freezing of bakery products was presented by Dr. George Garnatz, Director of the Kroger Food Foundation, Cincinnati, and Chairman of the Baking Industry Research Advisory Council. Dr. Garnatz was invited by Director Diehl as a special guest to discuss this new and important subject and he emphasized the large apparent possibilities for economic advantage in freezing of bakery products. Studies are needed, he said, ranging from consumer acceptance to various problems in actual freezing and handling.

A number of partially completed or well advanced studies now being aided by the Foundation were reviewed. Harold Humphrey, Council member, discussed briefly the time-temperature studies at USDA's Western Regional Research Laboratory on frozen foods and also the comprehensive project sponsored by the National Association of Frozen Foods Packers on nutritive values of frozen foods. (The latter is of extreme interest to, but not aided by, the Foundation.) Dr. Henry Kraybill, Council member, discussed the project under way in the University of Chicago on Staphylococcus food poisoning.

W. T. Pentzer, Council member and project leader, spoke briefly of the recent advancements in the fresh-citrus storage studies conducted by USDA. Prof. C. E. Baker of Purdue University described briefly the project in Purdue University on storage volatiles, air purification, and com-

A group of officers of TRRF. Dr. S. C. Prescott, chairman of the board; Wm. A. Sizer, president; K. F. Stepleton, assistant secretary; E. G. Erickson, retiring treasurer.

patibility of various products in storage rooms. Dr. J. G. Woodroof reviewed the studies at Georgia Experiment Station of storage of peanuts and pecans. Dr. W. H. Cook surveyed some of the refrigeration studies under way in Canada.

A new activity of the Foundation mentioned by Mr. Diehl will be aid in support of *Refrigeration Abstracts*, published by American Society of Refrigerating Engineers. Mr. Diehl mentioned the fact that Robert DeS. Couch, president of the Packaging Institute and special assistant to the Manager, Container and Carton Division, General Foods Corp., Battle Creek, Mich., has been invited to join the Foundation's Scientific Advisory Council and has accepted. During the past year two members of the Council, Dr. Mary E. Pennington and James M. Lemon, have passed away. Another severe loss has been the death of Dr. E. C. Auchter, one of the members of the Foundation's Board of Governors who represent the public. Mr. Diehl reported that in its financial experience during the past year the Foundation has made sound progress.

Dr. Donald K. Tressler, Technical director Quartermaster Food and Container Institute commented briefly on the research work being done on holding army rations. Currently they are working toward storage requirements that can be supplied by warehousemen without the necessity of special equipment or arrangements.

Review of New Projects

At the Saturday afternoon session Dr. Diehl reviewed briefly the projects now being considered. These included: the freezing and storage of bakery goods, plastics, refrigerated storage of oleomargarine. The warehousing industry, he said, is now moving into a period of larger rooms and at the same time the increasing diversity of products makes it necessary to store several together in one room, thus creating the necessity of knowing more about the permissable range of temperatures for different products. Transfer of odors, and the storage of beer needs more study. On the refrigerated storage of canned foods and of floricultural products, there should be more information. On the latter considerable work has been done but the findings need to be integrated.

Short term projects now under way include study of fluorescent or vapor lights in cold rooms, poultry packaging in cooperation with the Institute of American Poultry Industries, Ammonia damage, condensation, storage of spices, the effect of irridiation on foods on which there is much misinformation, and storage of coffee.

Dr. Wm. H. Cook, National Research Council, Ottawa, Canada, gave a brief talk on the fundamentals of freezing, with special reference to quick freezing. Recent studies have confirmed that quick freezing results in smaller ice crystals and less cell damage. They have also shown that addition of salt to reduce the freezing point makes cell membrane less resistant.

Frozen Foods Research

Harold Humphrey, Birds Eye Division, General Foods Corporation reported that the National Frozen Food Packers Association has, after considering it for two or three years, formed a Nutritional Research Committee to find out more about the storage of frozen foods. It is now adequately financed and ready to start work. Seventeen areas of the country are each represented by a member of the frozen foods industry. The committee is now cooperating with The Refrigeration Research Foundation to study the effect of storage on cooking techniques and other factors, and representative samples of frozen foods are being analyzed for their chemical content. The study will include 45 frozen fruits, vegetables and meats. It will also include market surveys. Improved temperatures and other better operation of retail cabinets, it is hoped, will come through the better understanding of how such cabinets should be used.

H. E. Crowther, Chief Technical Section branch of the commercial fisheries, Fish and Wildlife Service of The Department of the Interior reported briefly on the frozen storage of salmon. Among other problems is that of retaining the color in packed salmon. This is being done and it is hoped to find out what causes the change in color.

Paul Christensen gave a short preview of the report he was to make at a session of the National Association of Refrigerated Warehouses. He said that The Refrigeration Research Foundation was constantly adding new projects in an increasing tempo and 100 new ones had been added for this year.

W. T. Pentzer, Agricultural Research Administration U. S. Department of Agriculture reported that recent studies on improved packaging of fruits and vegetables will have a considerable effect on warehousing. Under the new vacuum cooling process more and more vegetables are going into consumer sized packages. These packages are being well received all along the distribution line including wholesalers, retailers and consumers. One drawback, for the ice industry, is that the new vacuum cooling process uses much less ice.

Sanitation Manual

Closing the session Dr. Diehl called attention to the need of the industry to give some thought to sanitation. A sub-committee has been appointed to draft a proposed manual on the subject and this will be submitted to the Executive Committee for approval. Although no urgent need has appeared for such a manual at this time Dr. Diehl recommended it as highly advisable to be ready for use if or when needed. Other subjects on the agenda, for which time had not been available, he listed as dairy products, frozen milk, poultry products, fishery products.

Membership Meeting

The annual membership meeting of The Rrefrigeration Research Foundation was held Sunday afternoon. Presiding was Dr. S. C. Prescott, chairman of the Board. Minutes of the last meeting were read by the assistant secretary, K. F. Stapleton, Lafayette, Ind. and approved.

Dr. Prescott pointed out that the Foundation had passed its first decade during which it had made signal progress and future prospects indicate even more accomplishments. He reviewed briefly the work of the Research Advisory Council which had provided a valuable background for the work of The Refrigeration Research Foundation which started functioning in 1943.

The work of the Foundation in collecting and disseminating scientific information has been a valuable service not only to the refrigerated warehousing industry but also associated industries and the public generally. Problems of many types have been presented many not foreseen, and in this and in other respects it has held to the high ideals under which it was organized. Most important, it has had as its director ever since it was organized, Dr. H. C. (Dutch) Diehl who has maintained its high scientific standard.

One important development has been cooperative research with other organizations, thereby broadening its influence. Up to 1951 more than 40 long range research projects had

(Continued on page 48)

Refrigerated Warehousing Industry

NATIONAL ASSOCIATION of REFRIGERATED WAREHOUSES

Division of American Warehousemen's Association

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THIS MONTH IN BRIEF

A report was presented at the annual convention of the National Association of Refrigerated Warehouses by President A. B. Efroymson of Cleveland, Mr. Efroymson listed some of the more important accomplishments of the association during 1952, and paid tribute to the other officers and members of the Washington staff.

Report of the Department of Agriculture on cold storage holdings for April 30 show an increase in cooler occupancy but a decrease in freezer occupancy from 73 to 70 per cent. Other details give figures on the various commodities in storage.

The relative merits of semi-scalding versus subscalding for dressing turkeys and chickens are discussed, based on findings from experimental studies. There are advantages in both methods as set forth in the article on the subject.

The President Reports

On highlights of progress and accomplishments of National Association of Refrigerated Warehouses at annual convention. Bright outlook ahead.

A. B. EFROYMSON,
President, National Association of Refrigerated Warehouses

SINCE the New Orleans Convention in May, 1952, NARW has had another year of outstanding progress and accomplishment. It would be impossible to recount every detail of this highly successful year and still keep the length of this report to reasonable proportions. Some of the highlights, however, are these:

Liaison with Government Bureaus, agencies and officials; the gathering and reporting of news concerning their operations, and particularly the concentration on OPS decontrol, occupied a major portion of your staff's time during the past two months.

Although our continued efforts to obtain industry decontrol were fruitless under the previous Administration, they paid off handsomely when warehousing was among the first industries to be decontrolled under the new Administration.

Getting acquainted with the many new officials in Washington, and impressing upon them the vital role of refrigerated warehousing in our economy is a continuing and interesting job. Our reception has been excellent.

These contacts and the related educational work have been extremely helpful in assisting NARW members in their relations with DTA, OPS, WSB, SSB, USDA, DPA and numerous other agencies.

Liaison and contact work, however, must also be conducted internally, if all segments of the association are to be maintained on a solid basis. To this end, your Executive Vice-President makes it a point to visit every chapter and state group at least once a year. This year was no exception. Incorporated in these trips are visits with allied industry groups, particularly during their meetings and conventions.

During these visits with customer groups, particular emphasis is put on good customer relations. "Operation Zero" panels, which were conducted under NARW sponsorship at the All-Industry Frozen Food conventions, the National Poultry, Butter and Egg Association meeting, and at our own convention last year, were very effective in helping warehouse operators and customers better understand one another's problems. In some cases, these problems are on their way to solution. In every case, a better business climate results for all concerned.

An outstanding example of inter-industry cooperation during the past year were the two surveys of turkeys in storage. These surveys were made by NARW at the request of, and in cooperation with, the Institute of American Poultry Industries. The response of NARW members to "another questionnaire" was excellent and produced results extremely helpful to the turkey producers.

The CCC Storage Contract and Performance Bond came in for considerable study and discussion. NARW members objected to several sections of the contract, which were not in keeping with commercial practice. A special committee headed by Herbert Farnsworth came to Washington to discuss the contract with USDA officials and recommended certain changes. As a result of this meeting, the contract was revised and reissued AS TW-102 (Cold)—Offer to Store—which incorporated practically all the changes recommended.

Subsequently, a similar meeting was held to discuss the CCC bond requirements. Although it was not possible to have this requirement eliminated, as a result of this meeting several changes are now under consideration by CCC, which will make the bond requirement a little more equitable and easier to operate under.

One of the most alarming developments of the past year was the proposed State Warehouse Act, sponsored by USDA, and submitted to the Council of State Governments for referral to the various state legislatures. This Act, which would have imposed strict regulations on every phase of warehouse operations, was vigorously opposed by NARW. Again a special committee came to Washington and appeared before the Legislative Drafting Committee of the Council of State Governments. As a result, the proposed Act was tabled for a year, during which time NARW will submit a formal brief stating objections to the Act.

During the year, NARW cooperated with TRRF in sponsoring three training conferences at St. Louis, San Jose, and Baltimore. These conferences, which specialize in practical down-to-earth operating problems, were directed specifically to secondary management personnel. All three were highly successful and were attended by a total of more than 250 "students."

The NARW Group Insurance Plan, which went into effect in May, 1950, continued to grow during the past 12 months. The plan has particular appeal to companies with less than 25 employees who cannot obtain bona fide group insurance on their own. However, several larger companies have also enrolled because they found the plan met their needs and did it at a reasonable rate.

Some companies which wanted to join the plan, were not able to do so because of their union situation. To overcome this, the plan was amended to give employers the option of insuring either all permanent, full-time employees, or only permanent full-time non-union employees. Employees of NARW members are currently protected by nearly $650,000 of insurance in force.

NARW members were kept posted on industry, government, association and related affairs through 29 "Cold Facts" and 25 "Quick Sheets" issued during the past 12 months. In addition, the 1951 AWA Yearbook was published in March, as was a new and finer edition of the "Directory of Public Refrigerated Warehouses." 3500 copies of the directory were printed and already some 3000 copies have been mailed to refrigerated warehousemen and their customers. This book is proving itself to be an increasingly effective business getter for NARW members with each edition.

Other Activities

Other activities in which your association has engaged during the past year include the following:

Cooperation with the Federal Civil Defense Administration for the storage of blood derivitives; publication of NARW interviews with key government officials, which incidentally received mention in the "Public Relations Journal"; participation in the Quartermaster Association Convention with particular reference to the storage of army rations; continued study of the Uniform Commercial Code; preparation of a brief for submission to the Senate Labor and Public Welfare Committee stating warehousemen's position with respect to Food and Drug Law amendments to restore FDA inspection authority; preparation of numerous articles for allied trade publications; Warehouse Operations Committee poultry container survey; assistance to members on applications for priorities, tax amortization, etc.; June 1, 1952, saw the new Army Storage Contract go into effect, which was developed by the Emergency Plans Committee under the Chairmanship of Vallee Appel; formation of the NARW Cost Committee and extensive ground work in costs by Chairman W. C. Baker.

In addition, of course, NARW officers handled hundred of requests from members and others for information or assistance on every conceivable subject. Each of these was handled on an individual, tailor-made basis. These and other activities involved the writing of approximately 3700 letters, memorandums and telegrams, plus innumerable personnel visits and phone calls.

A full report on legislative activities will be found in the report by J. P. Johnson, Chairman, NARW Legislative Committee.

NARW membership, which reached an all-time high last year, has surpassed even that record this year. At the end of April, 1953, there were 335 regular members; 118 branch members, 23 associate members and 12 honorary members for a total of 488.

It would not be possible to write a paragraph on public relations activities during the year without repeating everything mentioned above. Practically everything your association does concerns public relations—both internal and external—in some way, because we are constantly dealing with publics like your customers, allied trade groups, employees, members, suppliers, government, students, and the public in general. Every effort is made to see that in our relations with these groups, the best possible impression is created and maintained about your industry and your association. We think the foregoing accomplishments testify to the success of our efforts.

This report would not be complete were I not to pay special tribute to our fine staff here in Washington. To Bill Dalton, Joe Colquitt, Lucille Temple and their assistants and associates, I extend my deepest thanks for making my job an easy one during this past year, and I thank each of them from the bottom of my heart.

Letter Corrects Concern Over Butter Spoilage

BUTTER storage has been the subject of a number of news stories recently, especially since President Eisenhower expressed concern over the possibility of butter spoiling in storage. To correct this impression and to focus attention on the excellent job refrigerated warehousemen are doing in storing this butter, Wm. Dalton, executive vice-president of the National Association of Refrigerated Warehouses sent a letter to the President, outlining the safe, scientific storage conditions under which this commodity is held. The letter follows:

Dear Mr. President:

Following your news conference of Thursday, April 2, the press reported on your concern over the large amounts of butter moving into storage under the price support programs. These stories gave the impression that you were particularly concerned about the possible spoilage of this butter in storage. Some articles even suggested that spoilage was already occurring.

It is perfectly natural, Mr. President, that you are deeply concerned over the economic and distributive phases of the current butter situation. We share your concern. However, the preservation of this butter in the scientifically operated public refrigerated warehouses of America should cause you no worry.

Butter is stored at very low scientifically controlled temperatures of zero degrees F. and below in special butter rooms where the humidity is also carefully controlled.

This product is regularly stored for a full year and it can be successfully held for two years, if necessary. A few years ago butter was stored experimentally for five years and when removed from storage had lost none of its flavor or quality. It's a matter of record that of the 50 million pounds of butter stored by the government from 1949 to 1952 in the nation's Public Refrigerated Warehouses, not one pound was lost through spoilage.

There need be no serious concern over proper storage space for this butter either. Since the end of World War II the public refrigerated warehousing industry has increased its sharp freezer (0 degrees F. and below) space by over 63 million cubic feet. This expansion is continuing.

Our industry is anxious to give the government every cooperation in its storage programs—and this includes safe, scientific storage conditions. You can rest assured, Mr. President, that where quality products are purchased by the government and entrusted to the care of reliable and experienced refrigerated warehouse operators, quality preservation is assured.—Respectfully, Wm. Dalton.

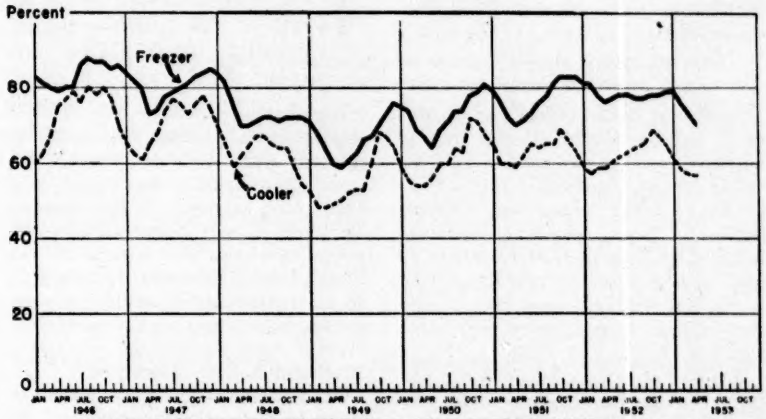
April 30 Cold Storage Holdings

ACCORDING to warehouse reports received by the U. S. Department of Agriculture for the month ended April 30, holdings of apples still in storage totaled a little more than 3 million bushels. Frozen fruit stocks were at a near post-war low for April 30 with 153 million pounds reported in storage. Seasonal reductions in frozen vegetable items were almost 60 percent greater than average but holdings of 382 million pounds were still above average for this time of year. Creamery butter holdings increased to 153 million pounds while American cheese stocks rose to 233 million pounds. Case eggs in storage —827,000—were at an all-time low for April while holdings of poultry at 140 million pounds were the second lowest on record since 1945. Holdings of beef were more than 60 percent above average but stocks of pork were 15 percent below the April 30 average.

April 30 stores of refrigerated commodities totaled approximately 3.3 billion pounds, of which 2.1 billion were accounted for by freezer-held commodities. Freezer stores were about 4 percent under last month's stocks and 6 percent less than April 30, 1952 holdings. Cooler-stored items totaled 1.2 billion pounds which represented a 9 percent decrease in net weight during April. Contributing to the seasonal net reductions in both cooler and freezer weights were fresh and frozen fruits and vegetables, dried eggs, meats, and poultry which collectively more than countered the seasonal accumulations of the other cooler and freezer commodities.

Holdings of fresh apples in storage on April 30 were about half the stocks of a month earlier. With slightly more than 3 million bushels in store, current stocks were only a little greater than last year's holdings, but more than one million bushels less than average for this time of year.

Frozen fruit stocks reflected an April net withdrawal of 37 million pounds which compares with a 36 million average withdrawal for April and 44 million pounds withdrawn from storage last year this time. April 30 stores of 153 million pounds of frozen fruits were about one-fifth less than the April 30, 1948-52 average and the stocks last year. Net reduc-



END OF MONTH OCCUPANCY OF PUBLIC COLD-STORAGE WAREHOUSES, 1946-53

Storage Occupancy

Cooler occupancy on April 30 was greater than on March 31 in all regions except in the West South Central, Mountain, and Pacific. The seasonal gains ranged from a high of 8 points (New England) down to 1 point (West North Central and South Atlantic). The national increase during this period was 1 point as cooler occupancy reached 57 percent by the end of April which was about average for this time of year but 2 points below that of a year ago.

The national decrease in freezer occupancy from 73 to 70 percent was closely matched by the decrease in freezer occupancy reported by warehousemen in the New England and Middle Atlantic regions. Larger decreases in freezer utilization were reported by warehousemen in the South Atlantic, East South Central, and Pacific Coast regions; but in the East North Central, West North Central, and West South Central regions freezer occupancy on April 30 was about equal to the previous month's level.

TABLE 1—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

	April 1953	March 1953	April 1952	Five-year Average
Beef	218,497	235,442	240,708	132,732
Pork	538,257	569,204	823,741	634,451
Other meats and meat products	171,275	185,017	166,256	135,822
Frozen poultry, lbs.	140,432	174,243	194,965	150,360
Creamery butter, lbs.	152,885	132,790	10,522	34,307
American cheese, lbs.	232,593	201,425	139,705	127,822
Other cheese, lbs.	17,777	16,320	14,401	15,171
Shell eggs, cases	827	375	2,184	1,870
Frozen eggs, lbs.	97,321	65,201	111,185	135,712
Apples, bu.	3,263	6,386	2,894	4,337
Frozen fruits, lbs.	153,003	189,654	191,794	190,678
Frozen vegetables, lbs.	381,587	419,899	313,708	239,119
Frozen fish, lbs.	109,090	119,099	113,544	84,916

TABLE 2—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

	Net Piling space (000 cu ft)		April 1953 (%)		March 1953 (%)		April 1952 (%)		5 year average (%)	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	2,847	7,157	40	61	32	64	39	76	43	65
Middle Atlantic	31,266	35,444	47	66	45	68	55	74	50	63
East North Central	26,276	25,686	68	79	64	80	63	83	62	73
West North Central	11,490	19,989	55	78	54	79	65	90	67	82
South Atlantic	8,253	12,351	60	75	59	80	64	82	60	77
East South Central	2,292	3,673	78	80	75	84	62	84	68	81
West South Central	7,605	8,663	68	73	72	73	63	62	65	61
Mountain	1,414	3,093	57	69	59	74	73	88	75	74
Pacific	16,057	27,713	53	59	56	63	54	62	50	58
United States	107,500	143,769	57	70	56	73	59	76	57	69

TABLE 3—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

	Private and Semi-private warehouses						Meat Packing Establishments					
	Net Piling Space (000 cu ft)		Space Occupied—percent April 1953		April 1952		Net Piling Space (000 cu ft)		Space Occupied—percent April 1953		April 1952	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	—	—	—	—	43	50	—	—	—	—	—	—
Middle Atlantic	1,748	1,240	39	70	32	56	902	272	89	69	62	79
East North Central	3,292	5,201	64	61	61	74	2,810	851	83	77	80	95
West North Central	371	2,135	61	69	58	63	18,316	6,744	35	68	89	95
South Atlantic	136	5,936	31	55	42	72	588	182	73	74	87	100
East South Central	—	—	—	—	—	—	67	74	100	100	99	89
West South Central	—	—	—	—	56	93	294	160	100	100	100	100
Mountain	466	196	82	—	94	81	166	107	100	100	92	100
Pacific	1,935	5,031	44	32	19	34	541	167	100	100	88	93
United States	7,948	19,739	53	52	43	62	23,684	8,557	47	71	84	94

NOTE:—Blank spaces indicate that insufficient returns were received.

tions during April ranged from a high of 17 million pounds (frozen strawberries) down to one million pounds (blackberries, blueberries, plums and prunes, Young, Logan and similar berries). These seasonal declines brought holdings of frozen fruits to a near post-war record low for April, as current holdings were only about two million pounds above the post-war low recorded in 1950.

Frozen vegetable stocks withdrawn from storage during April were almost 60 percent greater than average. The 38-million-pound reduction compares with an average April net withdrawal of 24 million pounds and 34 million pounds in 1952. Stocks on hand amounted to 382 million pounds, which exceeded last year's stocks and the 5-year average holdings by 68 and 142 million pounds, respectively. Holdings of frozen orange concentrate reflected an April gain of two million gallons which raised the national total to almost 21 million.

Net accumulations of cream (fluid and plastic) brought national stores to almost 11 million pounds by April 30. Stocks of creamery butter were 20 million pounds greater on April 30 than a month earlier and totaled about 153 million pounds. Last year butter holdings were not quite 11 million pounds while average April 30 stores were 34 million pounds.

American cheese stocks on April 30 totaled almost 233 million pounds which was a gain of more than 31 million pounds over March 31 stores. Holdings of all kinds of cheese amounted to 264 million pounds by the end of April.

National stores of frozen poultry were the second lowest April 30 on record since 1945 with 140 million pounds reported in storage. During the month, net withdrawals totaled 34 million pounds which compares with a 38-million-pound reduction last year and 40 million pounds in the 5-year period ended 1952. Stocks of fowls were reduced by 8 million pounds to 20 million while holdings of turkeys fell off to 73 million pounds or a net reduction of 20 million pounds from the previous month.

An all-time April 30 low in shell egg stocks was reached this year with national stores totaling only 827,000 cases. The April increase was only about half as great as the average April into-storage movement and was about three-fourths as great as the accumulations last year. Frozen eggs on hand April 30—97 million pounds—were below last year's stocks and average April 30 holdings by 14 and 38 million pounds, respectively.

Net withdrawals of meat and meat products from storage amounting to 62 million pounds brought national stores down to 928 million pounds by April 30. These stocks were slightly larger than average for April but were about one-fourth less than holdings of a year ago. Beef stores were down 17 million pounds to 218 million pounds; pork holdings fell off 31 million pounds to 538 million. While holdings of beef were not as great as last year, they exceeded average April holdings by 85 million pounds. On the other hand, pork stocks were below last year's holdings and the average as well.

Frozen fish and shellfish stores totaled 109 million pounds on April 30 while cured fishery products amounted to 17 million pounds. Total stores of 126 million pounds compares with 137 million on hand the previous month and 131 million last year.

Storage Outlook

A continued rise in cooler occupancy is expected during May and by the end of the month the occupancy level should be at least 2 points greater than the utilization reported April 30. Freezer utilization by the end of May should be lower than it was at the end of April if the 5-year average pattern prevails, but in the last two years there was a 1 point rise during May. In view of the large holdings of butter, frozen vegetables and juices, and with an expected increase in holdings of frozen fruits and juices, it is not unlikely that an increase in freezer occupancy will again prevail during May.

Turkey Producers Warned Against Over-production

A WARNING has been sounded to turkey growers, by Secretary of Agriculture Ezra Taft Benson, not to depend on price supports unless they use self-discipline in holding turkey numbers in bounds.

"Too many turkeys were produced last year to sell at profitable prices and the government bought 6 per cent of the crop through a surplus removal program at a cost of approximately $27,000,000," the Secretary said. The turkeys were donated to the School Lunch Program.

"Leaders of the turkey industry do not want over-production and price supports again," the Secretary said. "They have urged that the intentions of the government regarding future purchases of turkeys be made known now, at the time eggs are being hatched and poults are being started."

The Turkey Industry Conference on March 6 unanimously agreed that, "Unless our turkey industry makes the recommended downward adjustment this committee feels that no surplus removal program should be considered for the 1953 crop." The committee recommended that the 1953 production of mature heavy turkeys be reduced about 12 to 15 per cent below last season's record crop of 44½ million birds.

The majority of the group expressed its opposition to rigid, mandatory price support or any program involving mandatory production controls.

"The time to adjust production to probable demand for turkeys is now," said Secretary Benson. "Turkey growers along with companies financing them, should recognize the risks of possible over-production and be prepared to accept market prices.

"We commend industry leaders for their sound advice that we give such advance warning. Turkey growers have rapidly built up their business and want to hold production in line with demand. This is the type of leadership which is needed in agriculture," said Secretary Benson.

Sub-scalding versus Semi-scalding of Poultry

HANS LINEWEAVER
and A. A. KLOSE
Western Regional Research Laboratory
Albany, Calif.

This compilation of information on the sub-scalding versus semi-scalding for both turkeys and chickens, reprinted by permission from The Turkey World, is offered here as the latest information on the subject, and a review of several questions being asked about the subject. Sub-scalding, it is shown, cuts processing cost but it affects the method of holding and display.

THE RELATIVE merits of semi-scalding and sub-scalding for both turkeys and chickens have been discussed in a lot of places during the past year or so.

This interest has developed, because today's customer is more insistent than ever that he be supplied with clean, pin-free birds; also, because of the much greater cost of pinning the semi-scald than the sub-scald birds. Too, interest has grown because some processors are using the sub-scald method with success.

Questions

Many questions have been raised in these discussions. They include:

(1) Are sub-scalded birds of as good quality as semi-scalded birds?

(2) Does the customer like the appearance as well?

(3) Will they keep as well?

(4) How should they be handled for quick sale, and for sale after storage?

(5) Will they take up more water during ice chilling or ice packing?

(6) Are they tough?

(7) Are they as resistant to bacterial deterioration?

Don't Have All Answers Yet

It is not possible at present to answer all of these questions with scientifically supported data. But we can tell you a good deal about these two scalding methods, if you will allow us to draw freely from many sources besides our own laboratory.

Perhaps we should make sure at this point that we agree on the meaning of the terms applied to the scalding condition. We consider **semi-scald** to refer to scalding temperatures of 130 degrees F. or less and **sub-scald** to refer to scalding temperatures of 138 to 140 degrees F. or very slightly higher. The time of scald may vary generally from 30 to 90 seconds.

At present, it appears that sub-scald will be more advantageous under some circumstances and semi-scald will be more advantageous under others. We shall try to evaluate the factors that lead to this position.

Birds subjected to the two scald temperatures differ in appearance. The freshly dressed, sub-scald bird tends to glisten, to be slightly sticky, and to have more of a reddish pink meat appearance that is not typical of the semi-scald bird. But this, of itself, does not mean that the freshly processed sub-scald birds are less acceptable to the ordinary consumer than the semi-scald birds. Indeed, it has been commented by both research and industry people that both types of birds have a highly acceptable though different appearance initially.

If this is the case with respect to initial appearance, we may then discuss the advantages and disadvantages of the two methods and also how to handle the two different types of birds to maintain their initial appearance under various holding or handling conditions.

Sub-scald Cuts Pinning Time

The most important, if not the only advantage of sub-scalding is the markedly greater efficiency of producing a really pin-free bird. Various processors state that it requires one-fourth or less time to pin birds scalded at the higher temperature.

Numerous disadvantages of sub-scalding have been cited but their importance has not been fully appraised. The sub-scald birds, if chilled in air or if hung in an air cooler for even 24 hours following ice chilling, develop a dark red, glazed appearance that is undesirable. Thus, sub-scalding should not be used if birds are to be chilled or held in air without adequate wrapping.

Ice-packed and also plastic-wrapped, frozen (whether whole or cut-up) birds have a uniform appearance that is different from the appearance of semi-scald birds but is not necessarily less preferred by the consumer. The limitation on holding sub-scald birds in air without wrapping is the most important proved disadvantage in sub-scalding.

Other Differences Reported

Other differences have been reported to be caused by the sub-scald temperature but their importance in a practical way has not been established. M. I. Darrow of Swift and Company reported at the 1952 Fact Finding Conference that the meat of sub-scald chickens was frequently but not always, somewhat tougher than the meat of semi-scald birds.

We have observed for turkey as well as for chickens that after roasting or broiling (i.e. dry heat) the skin of the sub-scald bird is tougher. Also, the skin tends to rise away from the meat. But it is not known to what extent, if any, these factors will lead to consumer reaction.

Even though it is true that many sub-scald birds have been sold we, of course, cannot safely conclude that the consumer prefers a sub-scald bird. At this stage of research dedevelopment and experience, the small processor now using a semi-scald will want to consider the criticalness of his market, as well as the potential saving in operating cost, in deciding whether to change to a sub-scald.

Two other questions are frequently raised in connection with these scalding methods. The first is whether there is a difference in the moisture pick-up or loss during chilling or storage of the birds.

No Difference In Chilling

Our data on turkeys indicate that moisture pick-up during ice chilling is essentially the same for birds scalded by each of the two ways. Losses under dehydrating conditions (hung in air) tend to be greater for the sub-scald birds, but since it is not advisable to hold sub-scald birds under dehydrating condition because of appearance change the matter of weight loss should be of no importance.

The second question is whether there is a difference in microbial spoilage for birds scalded in the two ways. We find opinions and even theories that support both views. But we know of no proof of either view at present, especially for turkeys.

Darrow reported for one study no differences in bacterial counts for chickens scalded in these two ways and no evidence that spoilage was different. The questions of moisture pick-up and spoilage therefore have not yet been shown to be critical.

Birds Lose Cuticle

It is generally recognized from experience and from laboratory studies that scald temperatures in the range of 130 to 137 degrees F. will yield a bird of poor appearance because **part but not all** of the epidermal or outer skin is abraded off during picking. Thus, the bird looks splotchy.

Actually, some splotchiness may appear in birds scalded at 128 to 130 degrees F. Therefore, the operator, as he frequently does, will wish to vary the scalding temperature to suit his needs. A balance must be struck between need for easy feather removal and tendency of the birds to scuff under the conditions used.

Dr. J. M. Gwin of the University of Maryland recommends that temperatures above 140 degrees F. should not be used because of damage to the subcutaneous or underneath layers of skin and subsequent poor stability in marketing channels. We have not investigated this point but in some of our tests it appeared that the feathers required such little pulling force following scalding at 140 degrees F. that only a small gain would ordinarily result from the use of higher temperatures. On the other hand, time of scald and other factors will influence the ease of feather pulling, so it is not surprising that practices vary somewhat.

Scalding Not the Only Factor

Non-scalding factors that are known to affect picking ease include bird maturity, breed, sex, killing method and delay after killing. These are factors that are not fully appraised. But their variation can make it necessary or expedient to vary the scalding temperature (generally within a small range) in order to maintain optimum operating speed.

As already indicated, the sub-scald birds lose the tissue-paper-thin epidermal or cutical layer of skin. Because it is so thin, there is no significant weight loss in its removal. The shininess and stickiness of the sub-scald birds is due to the removal of this layer of skin.

At present the following limitations seem to apply to sub-scald turkeys. Unfrozen sub-scald birds should be ice chilled and handled in the ice-packed form; or in the packaged and refrigerated form when it is economical to package them.

Frozen sub-scald birds, we feel, should be packed in a good moisture-vapor-resistant material. The birds may be ice-chilled before packaging. Better yet, they should be packaged immediately after dressing and evisceration, followed by immediate blast freezing.

Military Tests Show Effects of Scalding

A PAPER by Robert L. Graf, Quartermaster Food and Container Institute at the Fact Finding Conference of the Institute of American Poultry Industries, described tests made on storage behavior of chickens scalded at 140 and 130 F, using ready-to-cook whole, ready-to-cook cut-up, and dressed birds, as well as several types of chilling and packaging methods.

The test birds were checked in the frozen, thawed and cooked state by recognized poultry authorities. Their ratings placed the birds scalded at 130 F. above those scalded at 140 F, in frozen and thawed appearance and cooked texture. They found no significant flavor difference between the two, however.

In a field test, conducted at Fort Lee, Virginia, over 50 mess stewards and first cooks evaluated the test and control birds and showed no significant preferance for either in the frozen and thawed state. Over 600 soldiers participated in evaluation of the cooked chicken, and showed no preference for either.

Based on this information, QMC has decided to permit scalding temperatures up to and including 140 F for chickens procured for Armed Forces use. Additional requirements are being set up to eliminate abuse of the use of subscald temperatures.

The influence of various chilling and freezing methods showed up more prominently in the sub-scald birds than in the semi-scald.

Pacific Northwest Association

THE Pacific Northwest Association of Cold Storage Warehousemen held its regular bi-monthly meeting on March 20 in Seattle, Wash. Main speaker was Clem Norton of the Northwest Poultry and Dairy Co., Portland Ore. He gave a very interesting and informative talk on the future development of his industry and how it will affect the refrigerated warehouse industry. He stressed the willingness on the part of the poultry industry to cooperate with the warehousing industry in producing a product acceptable to the present critical consumer. — Cold Facts.

Navy Tests New Process For Preserving Meats

A CATHODE-RAY irradiation process for preserving meat has been announced by the U. S. Navy. The process, which is being tested in a pilot plant operation at the Massachusetts Institute of Technolody, will protect meat at ordinary refrigeration temperatures for 60 days or longer, the Navy said. No claim is made that the process will sterilize meat and preserve it at room temperature. The process, which works on an assembly line basis and takes only one second to complete, has been successfully tested on meats, and nearly ripe spinach and tomatoes, the Navy said.—Cold Facts.

Vacuum Packing Offered as Substitute for Refrigeration

REFRIGERATION may not be required in new concentrates according to H. W. Stewart, new products and marketing consultant of San Francisco. The new process, called the Lannen Process, is said to utilize high vacuum extraction, flash pasteurization and vacuum closing. He said the product will not require refrigeration during processing, delivery, or while in stock at the retail store. Also it may be stored indefinitely at room temperature. — Cold Facts.

Effect of Diet on Storage Stability of Frozen Turkeys

THE fat-stabilizing ability of certain substances when fed to turkeys has been tested in two practical feeding experiments at the Kansas Agricultural Experiment Station. At the levels fed, the frozen storage stability of turkeys was not improved by incorporating in the diet the following substances: ethanolamine, tocopherol, pyridoxin, calcium pantothenate, monoethanol-ammonium gallate, and betaine.

Thermostabilization of Eggs After Storage

A STUDY has been made at Iowa State College of the functional properties of oiled and thermostabilized eggs before and after commercial storage. The egg white whipping and angel cake-making properties were affected adversely by thermostabilization but sponge cake, plain cakes and custard-making properties were not significantly altered either before or after storage.

Practical Refrigerating Engineer

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS

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THIS MONTH

Methods of testing and rating blower type coils are described by Edward F. Ince, research engineer, Marlo Coil Company. This paper was read at the 43rd annual NAPRE convention. Most of the tests in use today are in accordance with the standards of ASRE.

Questions of interest to operating engineers are propounded and answered in the Question Box.

Chapter activities and news notes are contributed from the various chapters and important news notes are contributed from members-at-large.

Testing and Rating of Forced Air Circulation Type Coils

F. EDW. INCE
Marlo Coil Co.
St. Louis, Mo.

The author of this paper given at the annual NAPRE convention last fall in Dallas, Texas, is Research Engineer for the Marlo Coil Co., St. Louis, Mo., and a noted authority on refrigeration subjects in the air-conditioning field. Mr. Ince is a graduate of the Electrical Engineering School, University of Missouri, and a licensed professional engineer. He is a member of ASHVE, ASRE and RSES. At present he is Chairman of the St. Louis Section of ASRE.

MOST all tests of forced air circulation coils are now conducted in a manner detailed in the "Standards" of the American Society of Refrigerating Engineers. Basically this consists of a check by "two simultaneous methods" on the heat transfer of the coil. The basic test is based on air side capacity; that is, by measuring the volume and temperature differences of the air. The volume of air is determined by one of three methods. Two methods are an arrangement of receiving chamber, calibrated nozzle and measuring the air pressures with a manometer.

Fig. 1 illustrates a flow nozzle having a discharge coeffcient of 0.99. Other nozzle sizes are calibrated before use in tests. Fig. 2 is an arrangement of the nozzle, with receiving and discharge chambers for the test of the coil.

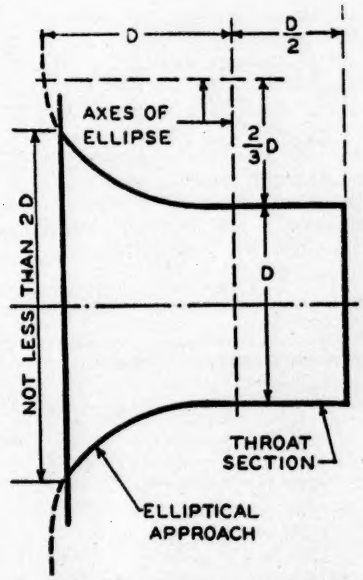


Fig. 1–Flow measuring nozzle

Another method, Fig. 3, gives a diagramatic plan of the coil test with mixing box before the chambers, and with multiple nozzles. The third method of air volume test is made with the use of a straight length of duct with air straightening device and the Pitot Tube. Fig. 4 illustrates this Pitot Tube test method.

In the process of the basic test, (individual air temperature readings are limited not to vary more than 2 F dry bulb and 1 F wet bulb) the average of these readings determine the values used for calculating the capacity. Air quantity is determined by velocity or static pressure readings taken only after condensate, frost or sprayed liquid is accumulated on the surface. Temperature readings are made with thermocouples, mercury or electric resistance thermometers having an accuracy of plus or minus one-tenth degree F.

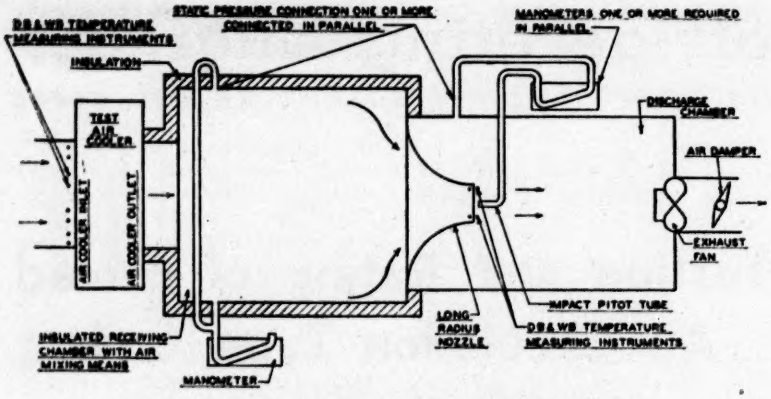


Fig. 2- Receiving Chamber, Single nozzle

described above to determine the capacity of the surface. Test Photograph 2 shows a typical arrangement for checking the air side performance of a coil. The instruments seen from the left to right are: Glass bulb thermometers, manometer (or draft gauge), multiple station for thermocouples, several pressure gauges and on the right is another manometer. The thermostatic expansion valve operation has been included in this test photograph.

The rating of a coil tested under the conditions as specified by the ASRE Standard is identified by the Group Number or Range. Since there are many field conditions which are

Confirming Test

One confirming test is made on the refrigerant side capacity as a check on the basic test. The heat absorbed in the process of cooling air by volatile refrigerant is confirmed by one of the following methods: (a) calibrated condensing unit, (b) condenser water, (c) refrigerant weight or volume, all as defined in ASRE Cir. No. 14, or (d) with a flow meter for the liquid refrigerant. Sometimes all measurements are taken to assist in checking the basic test, and it is possible to make additional confirming tests.

Test photograph I (See cover picture) is a view of a calibrated condensing unit with multiple connections for testing refrigerant flow. Also is shown a rotameter which is used for observing the liquid rate of flow. When the refrigerant is non-volatile (brine or other liquid coolant) its specific heat, together with the temperature difference and quantity, determines the capacity of the confirming test.

The duration of a test is dictated by the condition of the surface which is classified under Group Numbers as shown in Table 1. For all groups the readings are taken four times at 20 minute intervals after steady operation is accomplished. For Groups II, III and IV without brine spray, frost is allowed to accumulate during the time when the readings are taken. Test runs on Groups II, III, and IV are continued for eight hours, defrosting as required before starting readings, and the last two sets of readings are averaged for determining the capacity performance. For the ranges covered by Circular 16-R in the table, seven ten minute tests are recorded after an equilibrium run of one hour.

For complete instrumentation and procedure to rate coils, most of the manufacturers follow the manner

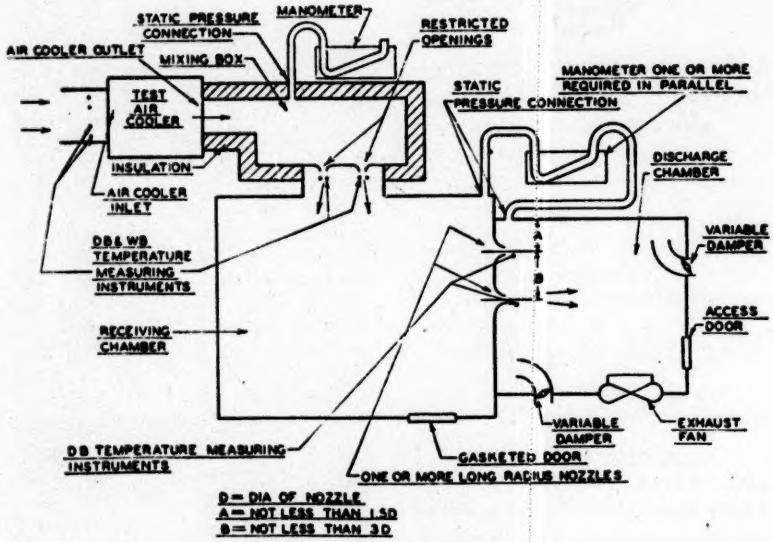
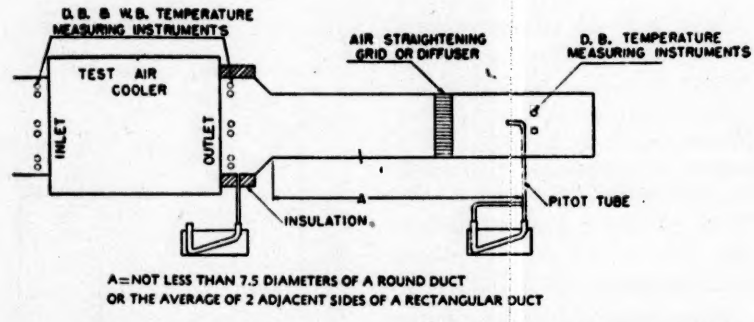


Fig. 3- Mixing box, multiple nozzles


D.B. & W.B. TEMPERATURE MEASURING INSTRUMENTS
AIR STRAIGHTENING GRID OR DIFFUSER
D.B. TEMPERATURE MEASURING INSTRUMENTS
TEST AIR COOLER
INLET
OUTLET
PITOT TUBE
INSULATION
A=NOT LESS THAN 7.5 DIAMETERS OF A ROUND DUCT
OR THE AVERAGE OF 2 ADJACENT SIDES OF A RECTANGULAR DUCT

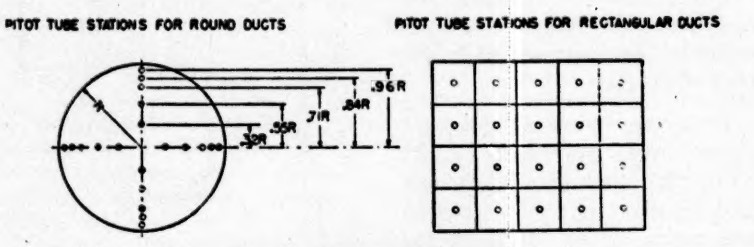
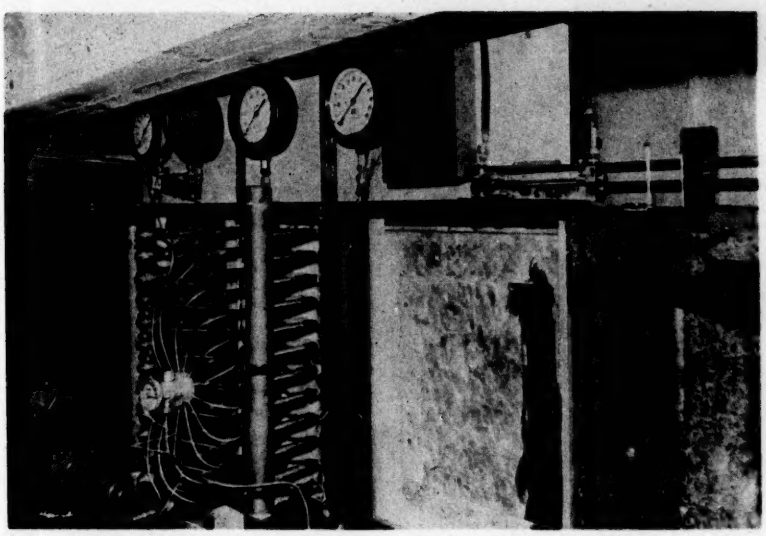


Fig. 4- Pitot tube method



Test Photograph 2 shows typical arrangement for checking air side performance of a coil. (Courtesy Alco Valve Co.)

not in these Groups, the Application Rating of a coil includes the sensible and latent capacity on the basis of the refrigerant temperature and the entering air dry bulb temperature, relative humidity and air quantity.

Sources of Error

The rating published in catalogs is usually more conservative than that determined by calculation in the "Standards" of ASRE. Sources of error in temperature readings with thermocouples are recognized in the laboratory applications. Although some precautions may be taken, all the sources of error cannot be eliminated. Also many variable conditions enter into the field applications which cannot be included in the laboratory and prescribed method of standard ratings.

The performance in application includes conditions such as physical dimension, air supply volume, friction, distribution, temperature and relative humidity; liquid refrigerant distribution, pressure, quality and cleanliness; suction line refrigerant pressure, superheat, oil return, liquid traps and flow resistance or pressure drop. If the refrigerant is brine or other coolant there are problems of distribution, pressure loss, cleanliness, electrolysis, corrosive qualities, air vents and drainage of tubes. Experience has dictated recognition of these conditions and manufacturers have allowed a factor of safety in their rating.

The manufacturer's rating of a coil includes their application of engineering skill of refrigerant circuit loading for maximum heat transfer and allowance for pressure drop and operating superheat, but the manufacturer has no control over all of the other conditions listed above.

Not only for competitive reasons must the economic values of heat transfer surface be considered, but also it is desired to have coil performance within a physical space, with a limited mass and under specified conditions. Some factors affecting basic heat transfer of finned coils are illustrated in a translation of an original paper by Th. E. Schmidt of Germany. When the coils are tested and rated for a specific application such as self-contained units, a special coil may be designed to give maximum performance within confined spaces and under set conditions.

If the coil is in a fan unit, the rating will include the air delivery and pressure with the fan motor horsepower. (If a spray pump is used its motor horsepower will be included.) The capacity rating is in gross values; that is, the heat of motors, and defrosting time are deductable values to arrive at the net rating of a fan unit. The unit rating is limited by the air volume delivered, and therefore will be satisfactory only for those applications within the range of total capacity and sensible ratio capacity of the coil, as rated by the manufacturer as a complete fan unit.

On behalf of all manufacturers who conscientiously try to furnish coil ratings that may be used in field application, the plea for all is that extreme care be exercised by the engineer to match load requirements both latent and sensible, and within the catalogued rating of coils.

TABLE 1. CLASSIFICATION OF STANDARD RATINGS

ASRE Circular	Group No. or Range	Entering Air Condition D.B.	F.R.H. %	W.B.F.	Temp.	(Temp.-Diff) (D. B.-E. T.)
25-44	I	45	85	(42.9)	30	(15)
25-44	II	35	85	(33.4)	20	(15)
25-44	III	15	85	(14.3)	0	(15)
25-44	IV	0	85	(-0.5)	-15	(15)
16-R	Comfort	80	(52)	67	40	(40)
16-R	Process	65	(77)	60	40	(25)
16-R	Food Preservation	45	(85)	42.9	40	(5)

References

Standard Methods of Rating and Testing Air Conditioners; Standard No. 16-R; and Standard Methods of Rating and Testing Forced Circulation and Natural Convection Air Coolers for Refrigeration, Standard No. 25-44, by the Joint Committee on Commercial Refrigeration Equipment, A.S.R.E.

Publicity Drive on Safety

A LETTER from W. F. Leonard Jr. of the Southland Corporation, Dallas, Texas announces that he has accepted the chairmanship of the Ice, Cold Storage and Locker Plant Division of the National Safety Council. Mr. Leonard is asking for all kinds of safety ideas: pictures, programs, safety stunts, award presentations, technical information, accident records, information on insurance and accident costs, arranging safety sessions, exhibits, etc., along with permission to publish the information collected.

He also suggests that ice companies, refrigerated warehouses, and locker plants arrange for a spot on the programs of all public and company meetings they can arrange for, to tell the safety story.

NAPRE Department

Why Place Freezing Point at 32°?

QUESTION No. 955: A question has come up in our chapter concerning the Fahrenheit thermometer. We have been unable to find why G. D. Fahrenheit placed 32 as the freezing point of water instead of 0. We know how the scale came about but the reason why 32 was used as the freezing point of water has not been found. Maybe you can enlighten us.—H.D.

ANSWER: The first thermometer scale that Fahrenheit used was one that Sir Isaac Newton had described in a paper in the Philosophical Transactions of 1701. Zero on this scale was set at the freezing point of water, and human body temperature was taken as 12. Fahrenheit then doubled this scale to make these two points 0 and 24, because he felt that a smaller degree would be more convenient. Upon finding that a mixture of ice and salt would produce a temperature much lower than freezing, Fahrenheit decided to lower the zero in order to avoid working with negative temperature values. He is reported to have used for the zero of his scale, the lowest temperature which he observed in Danzig during the winter of 1709. His new scale, which started at this zero but kept body temperature as 24, happened to place the freezing point at 8 and the boiling point of water at 53. Simply in order to make the degree smaller for convenience, he later multiplied this scale by four to give our present fixed points of 32 F and 212 F. (Notice that normal body temperature as inaccurately measured by Fahrenheit was 96 on the present scale).—J. B. Jones.

Use of Lithium Chloride To Arrest Freezing

QUESTION No. 956: In the February issue of NAPRE there was reference to the introduction of Lithium Chloride to Brine to arrest the possibility of freezing. This is an astounding revelation. It will prove quite an act of grace. May I ask if this substance is a liquid or powder. Secondly, is the proportion constant under all conditions. Thirdly, what percentage is advisable to introduce to the Brine? In conclusion, I shall esteem it a favor for any information relative to this interesting subject.—G. T. C.

ANSWER: This question refers to an article, "Air Conditioning Candy Plant," by Mr. Ralph G. Flohr in the February issue of ICE AND REFRIGERATION. The Kathabar unit mentioned uses lithium chloride brine to air condition the enrober room by maintaining it at 80 F and 17 percent relative humidity.

N A P R E Question Box

H. G. Venemann, Professor of Refrigeration, Purdue University and chairman of NAPRE Educational Committee, answers members operating probems monthly in this column. Send questions to Chairman H. G. Venemann c/o Purdue University, West Lafayette, Indiana.

Lithium chloride brine for air conditioning purposes has been used for many years. Pages 430 to 432, 1941, Heating Ventilating and Air Conditioning Guide give much information regarding the properties of lithium chloride brines, such as freezing temperatures at various concentrations, dew-points of air in equilibrium with lithium chloride solutions, specific heats, boiling temperatures, etc.

Calcium and sodium brines are also used in a similar way. These brine solutions are usually sprayed over the refrigerant coils and come in direct contact with the air from the room, thus cooling and dehumidifying it before it re-enters the room. All systems using salt must either add salt periodically to strengthen the brine solution or have a regenerating unit which evaporates part of the water. Some systems similar to these use a non-corrosive solution such as glycol in lieu of the salts.

A picture of an air diffuser for cooling air by liquid sprays may be seen on page 258, Refrigeration Theory and Applications.

All of the chlorides, sodium, calcium and lithium are salts and come to us in granular form. When mixed with water they are called brine solutions. The concentration is not constant with any salt solution. Every salt has the ability of absorbing water vapor. So the salt starts out with a strong concentration and after absorbing water from the air it becomes weak. If it is too weak it begins to freeze on the coils—so the weakest concentration is fixed by the coil temperature. Its maximum concentration is fixed by its eutectic temperature—the point at which the entire solution freezes solid. The eutectic point of sodium chloride brine is at minus 6 F and about 24 percent concentration. The eutectic point of calcium chloride brine is at approximately minus 60 F and 31 percent concentration. Lithium chloride brine has a eutectic point of approximately minus 106 F at 28.5 percent concentration.

Therefore the kind of salt used would depend somewhat upon the temperature required. For temperatures below minus 60 F one could not use calcium or sodium chloride solutions. For temperatures below minus 6 F one could not use sodium chloride. Evidently the Kathabar unit using lithium chloride solution was selected for cooling this particular enrober room for other reasons than mere temperature requirements, as for example: its design, its automatic features, its regenerating unit, or because of good salesmanship. Since all of the brines mentioned are corrosive the coils are usually galvanized, and an inhibitor is added to retard corrosion.—H. G. Venemann.

Freon to Detect Leaks

QUESTION No. 957: Why not use Freon in a CO^2 system to detect leaks? I have difficulty detecting leaks in a CO^2 coil in a low temperature room where soap bubble tests cannot be used. It occurred to me that a little Freon, say not more than 5% by volume, introduced into the system would help detection of the leaks. It is my understanding that one one-millionth of a part can be detected by use of Halide torch.—D.W.

ANSWER: We have a similar problem in detecting leaks in refrigeration coils, and while temperature does not bother specifically on our application as it is at ambient temperature, it is our practice to first put in a small charge of Freon and then back up same by CO_2 vapor to a pressure of about 300 P.S.I.

We then use a halide torch in checking for leaks at all joints and we also believe this to be a much more sensitive test than the soap bubble test. We have never paid too much attention to the amount or percentage of Freon in the system, but have had excellent results in so checking.

It is interesting to see that others are considering this and believe you will find it entirely satisfactory in spite of the difference in the molecular weights as apparently complete dispersal through the system is obtained.—F. C. Seefeldt, the Liquid Carbonic Corp.

New Questions

Temperature and Humidity Nuts and Dried Fruits

QUESTION No. 958: I am manager of a canned and packed food distribution warehouse which contains a 20 by 47 by 20 foot high cold storage room storing shelled and non-shelled nuts, and dried fruit. Our operations here are palletized using fork lift trucks through 3 ft. 6 in. by 8 ft. doors. Our plant consists of the following equipment: Model W-1000-FH Tecumseh or Universal compressor driven by a 10 hp motor with an Acme condensing unit all mounted on a Frick frame, serial No. 635007; The system is automatic Freon 12 with three 4½ ton electric defrost Krack

coils each with a 4½ ton TD2 Sporlan expansion valve; a Refrigeration Specialties solenoid valve is in the suction line near the compressor. The system was installed in Fall, 1948. The temperature at which the rooms have been held by this system is from 40 to 45 F.; humidity 70 to 80 percent.

In 1950 and '52 I lost considerable amount of product late in the storage season (Spring) because of mold. I have been told that the mold is due to my relative humidity, and that my temperatures are rather high for these products, too. I have no engineer in this plant and my experience is primarily canned food sales, not cold storage warehousing. Refrigeration contractors with whom I have consulted contradict one another as to the proper solution. What would be your recommendation with regard to temperature, relative humidity and the simplest and least expensive way to achieve those temperatures and humidity?—W.A.F.

Odor From Dehumidifier

QUESTION No. 959: The office air conditioning plant tends to give off a distinct odor for the first hour every day. It is a central station plant employing a sprayed coil dehumidifier as evaporator. The plant is shut down throughout the night and starts up one hour before the office opens up for the day. The dehumidifier water is changed weekly. There are no local nuisances. With a sprayed coil in the air stream (90% re-circulated) why should there be an odor?—J.O.P.M.

Recirculating Condensing Water Over Cooling Towers

QUESTION No. 960: What advantage if any would there be in recirculating the water of an indoor induced draft evaporative condenser (not restricted for air) over a single story roof located gravity type cooling tower assuming optimum atmospheric conditions for such an arrangement of say 110 DB and negligible humidity?—J.O.P.M.

National President Changes Positions

IN APRIL, Alvis J. Clay, National President of NAPRE, left his position at the city of Memphis to become Assistant Superintendent Engineer for Memphis Cold Storage Warehouse Co. and the Mid-South Refrigerated Warehouse Co. Alvis announced the change of positions during a visit to national headquarters on March 26. He had been for some time Senior Inspector in Smoke, Boiler and Refrigeration for the city of Memphis.

News Notes and Chapter Activities

Los Angeles

FRED HERR

A TRIPLE-BARRELED educational program featured the May 6 meeting of Los Angeles NAPRE Chapter. Held at the Terminal Club, the program consisted of two technical talks on centrifugal compressors, and a presentation on a controversial engineers' license bill which has been submitted to the current session of the California Legislature.

E. W. Smith, president of the C & S Equipment Company and member of the Educational Committee, announced that in introducing the speakers of the evening, he was pinch-hitting for Chairman Robert H. Savage, who had a very plausible reason for being absent: Bob was on his honeymoon.

The technical talks were given in two parts which complemented each other. H. D. Moore, division engineer, Pacific region, Worthington, Inc., first discussed the application, performance and servicing of centrifugal compressors from the manufacturer's standpoint. Following him came J. W. Bantau, chief engineer, Fox West Coast Theaters, who discussed centrifugal compressors from the standpoint of performance, which he interpolated with conclusions based upon the experiences of owner and operator of the machines. This double-sided presentation proved to be the drawing card that attracted an attendance of well above average, despite the fact that it was the city's hottest day of the year—90 F.

Pat Kelly, representing the local association of power engineers, was then introduced by President Frank Muzzy to explain Assembly Bill No. 868. Under this bill it is proposed to license steam and refrigeration engineers. The bill, as outlined by Mr. Kelly, is in the form of an act providing for the safe operation of stationary power plants and equipment for better protection of life and property, and delegating to the Department of Professional and Vocational Standards the power to issue licenses to engineers who are qualified to operate power equipment safely and efficiently.

Under the proposed measure, as explained by Mr. Kelly, no person would be permitted to operate a stationary refrigerating machine, irrespective of motive power, of more than 50 tons refrigeration capacity, or a stationary internal combustion engine of more than 150 hp, or an air compressor in a power plant which requires 50 hp, or more to drive, without obtaining a license to do so. The licenses would be issued in degrees based on experience and competence—Grade A, B and C licenses—so as to present no handicap to young men just entering the industry. A "grandfather" clause would protect engineers already active in their profession.

The bill on May 6 was still before the Government Efficiency and Economy Committee. Mr. Kelly solicited from the NAPRE members their comment and views on how the bill should possibly be revised to meet their approval, which suggestions would be passed on to the legislative committee reviewing the bill.

Steps still to be taken before the bill could reach the governor's desk for signature by June 30 are the following:

If the Government Efficiency and Economy Committee approves, it moves to the Ways & Means Committee, the floor of the assembly, and if passed there, to the Senate Ways and Means Committee, and the floor of the senate. To become law it would have to be acted upon before the Legislature's adjournment date, June 30. Failing to pass at this session, it could not again be considered until the 1955 session.

Frank Eccleston of California Consumers Corporation, Los Angeles, examines the trophy he won as low scorer in the 1952 golf tournament of Los Angeles Chapter NAPRE.

Harold Parsons and W. T. Snyder were received into membership at the May 6 meeting. This brought to 24 the number of new members signed up thus far in the 1953 drive, according to W. R. Burnett's report. He deplored the fact that only 18 members assisted in signing of the 30. He called for more to enter actively into the campaign, pointing out that Los Angeles has a selling point that no other chapter can boast of—that it's class instructor is Guy King, the author of the book on refrigeration that is used by all other NAPRE chapters as the textbook in its preliminary classes.

On the chapter's sports front, the most interesting development was the discovery of a bright new golfing star in the person of Alvin Beck, refrigeration engineer with the Hormel Packing Company, who joined the chapter a short time ago. Los Angeles NAPRE golfers are still talking about what Beck did to par, and to his opponents, in a match played as a warm up to the Third Annual NAPRE Golf Tournament, which is to be held June 28.

Playing over the Montebello Country Club links on April 26, along with 19 other chapter members, Beck turned in a 74, two over par, and exhibited such flawless form off the tee and on the putting green, that he is being tabbed as the man who may possibly unseat Chapter Champion

Frank Eccleston. First to congratlulate Beck was Eccleston himself, who won the 1951 and 1952 tournaments. The main tournament on June 28 is expected to attract a field of some 30 players, ranging from the 70-men, Beck and Eccleston, to some who turn in score cards that require a Cal-Tech physicist to compute.

In another recent battle of the fairways—a challenge match—Rudi Kettler of Fairbanks-Morse Co., and William Losch of the Frick Co. took the measure of Frank Muzzy of Skasol Products and Frank Eccleston of California Consumers Corp., four down in 18 holes. Their scores were: Kettler 84, Losch 88, Eccleston 91 and Muzzi 95. The true southern hospitality which Kettler and Losch offered at the Rancho Golf Club's 19th hole after the match, removed any sting of defeat, Eccleston declared.

Ed L. Nelson's entertainment committee reported that plans for the program to be presented at Old Timers Night on June 17 are underway. Dinner at the Terminal Club, in the form of one of those tasty ham-and-beans dinners that Nelson usually arranges, a floor show and introduction of old-timer members are to be on the program.

Los Angeles' Chapter's 1953 Program and Membership Index, prepared by a committee headed by E. T. Quinn of Pacific Fruit Express, was recently distributed to the membership. The roster lists the 342 members of record at press time, giving name, address, business affiliation, business and home phone, and year of admittance. The members of Colton, Calif. chapter are similarly listed in a separate section at the back of the booklet.

A bit of browsing through the directory discloses that Los Angeles Chapter has 16 members who have held 25 or more years of continuous NAPRE membership. Record holder in point of years is William Losch of the Frick Company, who joined in Dallas, Tex., in 1921. To J. Wesley Lamphier, now retired but for more than a quarter of a century refrigeration engineer with Terminal Refrigerating Company, goes the honor of holding the longest uninterrupted membership in Los Angeles Chapter—1922 to date. The membership tenure of Ben F. Duncan of the Baker Engineering Corp., Los Angeles, dates farther back than Lamphier's, but does not represent continuous membership. Duncan joined in 1911, and was reinstated in Los Angeles Chapter in 1951.

Entitled to the merit badge of "Oldtimer," are: Losch (1921), Lamphier (1922), Walter F. Perry (1923); H. G. Mansfield (1924), E. T. Quinn, John Berger, Howard R. Murphy, Herbert N. Royden, Ray Burnett and Frank Elliot (1925); William H. Brittin and Frank Hooper (1926); Paul Lebeskov and Earl Rattley (1927); Ed L. Nelson and Donald Byl (1928).

Twenty-year members include Rudi Kettler, C. A. Wielen, John Wood, A. B. Wicks, John Pagliasotti, Regis Gubser, Henry Hawkins and Paul Goicoches. The chapter also has 20 members of 15-year tenure and 65 others who have belonged a total of ten years. Those holding membership uninterrupted for 10 years or more total 110, one-third of the membership.

This would seem to reflect a vigorous and interest holding program of activity by California Chapter No. 2, and a zealous effort on the part of its leadership to make meetings sufficiently interesting and educational to hold the old members, as well as to revitalize the rolls with new additions, as has been shown by the chapter's victories and/or second place finishes during the past five national membership drives.

New Orleans

LEO J. VIVIEN

THE Chapter has seen much activity this month. April 8, at the regular meeting, Professor A. M. Hill lectured on Guy King's Refrigeration Course. The subject, Compressor drives, proved very interesting, and brought on much talk relative to the various standard voltage ratings on motors and the voltage service rendered by the utility company.

On April 17, the Board of Directors met. At that time Educational Chairman, M. Olivier, announced that our instructor, Prof. A. M. Hill, would take a leave of absence to go to Albuquerque, N. M., for three or four months. It was decided to cover other subjects during that period. The Educational Chairman announced that he has planned a program which covers talks on air conditioning and its applications, pumps and their applications, and three or more consecutive lectures on controls. In addition, he had arranged for some very interesting plant visits, and instructive films to be shown.

Another regular meeting was held April 22 at which Prof. Hill delivered his last lecture until after the summer months. He completed the Chapter on Operating. A very sincere rising vote of thanks was given the Professor for his generous services, and the members wished him well and hoped that his trip out west would prove enjoyable.

The One-Quarter Club, a fun loving gang comprised of Chapter members, held a stag at which crayfish, shrimp and crabs and beer, of course, were the center of attraction, April 29. On this day the weather was very bad and a threat of tornados striking the city was given much publicity. But, come hail or high water, wind or rain, the One-Quarter Club boys turned out. Needless to say, the storm was a false alarm and everyone attending had a swell time.

Under the able leadership of our Membership Chairman, M. Sofer, we are steadily taking in new members, 14 to date. Max has now started a membership drive, and has appointed the following team captains: J. C. Funel, C. Keating, J. Mariakis, J. Vieagas and L. Vivien. He means to do a good job, and wants everybody's help. The Chapter has no slouch in its local data book advertising Chairman, J. Mariakis and his able assistant, V. Foret. This team has secured over 24 advertisements so far, and hopes to surpass the wonderful showing made last year. *They wonder why other chapters will not be a little more competitive in this field.*

Eugene Orth, our Financial Secretary, is a wizard in getting the dues in. We wonder if Gene doesn't have a silent partner helping him do all this work. Nevertheless, he is doing a grand job and very few members are in arrears. President Jimmy Chaisson keeps us on the ball with much activity, and a fine program is scheduled for May. He claims the fine attendance is his inspiration.

Colton

H. O. BONTER

THE April 8 meeting of California No. 5 Chapter was held at the Santa Fe Ice Plant lunch room in San Bernardino. Instructor Frank Scherer delivered his class lecture from the Guy R. King Refrigeratiton Course, with numerous round table discussions on temperatures and pressure of water and ammonia.

After the regular business, President T. C. Bangs introduced the speakers, Andrew H. Murphy of the Marine Engineering and Supply Co. and Verne Welch of the Owens-Corning Fiberglas Corp. Mr. Welch gave a very interesting talk on fiberglas low temperature insulation along with a large display of various types of fiberglas for insulating work. The entire evening was a very interesting one and very educational. The group enjoyed the usual lunch at the finish of the lectures.

Fresno

K. W. FINDLEY

AT our regular meeting of March 23, L. H. Brown gave a very fine talk and also had drawings on the Servel gas refrigeration unit. There were a number of questions from the members for Bro. Brown to answer.

In April, our chapter held a pot-luck dinner at 7 p.m. at the home of Mr. and Mrs. Clifford P. Shupe. The members and wives had a very enjoyable evening playing games and our regular jack-pot drawing of numbers. There was almost a unanimous attendance. Our chapter manages to have one of these dinners once a year, making it possible for members and wives to get acquainted.

Seattle

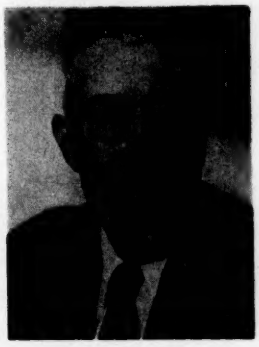
JIM BENNETT

THROUGH the courtesy of Clarence Giel, chief engineer at the Quartermaster Cold Storage, making the arrangements with Col. Quinn, Commanding Officer and Capt. Evans Post, Engineer, Auburn General Depot, we enjoyed an interesting field trip through the cold storage plant at First Ave. So. & Spokane St., March 26. Speaking of members, an old member, Richard Faszholz, with DuPont in the S.F. Bay Area, and a member of this chapter for years, was in town the other day and called up to say hello and asked to be remembered to all. There was no field trip in April due to the Refrigeration and Air Conditioning educational exhibit April 24-25-26.

Memphis

CHAS. A. CONLEY

AT the April 1 meeting of Tennessee Chapter, our instructor, H. L. Todd, talked on Lesson No. 8, Page 240 through page 244. He continued his talk on refrigerated cabinets, boxes, cold storage rooms and materials used in them. Samples of insulation materials were shown and the advantages of their uses and the disadvantages, the best way to build refrigerated spaces was discussed. No use of materials that would give off odors and harbor vermin was emphasized.



Chas. W. Burns

Chas. W. Burns, chief engineer for the Clover Farm Dairy Co., for over 30 years has retired. This member was born in 1886 in Conway, Ark. He began his engineering career with the Missouri Pacific Railway in the shops at Little Rock, Ark. in 1904. After serving four years apprenticeship in the power house he transferred to the Union Station power house in Memphis, Tenn. After serving as chief engineer of railway shops for both the Illinois Central Railroad and the Frisco Lines, Mr. Burns became connected with the Clover Farm Dairies of Memphis, Tenn., in May 1920 as chief engineer. He has held this position until his present date of retirement. Mr. Burns became a member of NAPRE in 1923, completing 30 years in the association this year. Last month he was honored by his firm at a banquet and presented with a desk set by company officials and employees.

At the April 15 meeting, through the cooperation of Mr. John Thrithart, field engineer for the General Electric Co., a motion talking picture, entitled "Motors in Industry, Progressive Mechanization," was shown. Progress of electric motors in their design, application and use, and what is being done today to improve them was illustrated effectively by the film.

Dallas

HAROLD A. KOUTNIK

THE regular meeting of the Dallas chapter was held April 20 in the auditorium of Alford's Warehouses. O. K. Irvine, of the Southland Corporation, led a discussion of Freon Applications. Later in the evening, a committee was appointed to make arrangements for a barbecue for the members of Dallas chapter, their friends and families, June 1. This will wind up NAPRE activities here for the summer months.

Members-at-Large

LEO J. VIVIEN

THERE has been quite a bit of activity in the way of correspondence from Members-at-Large this past month. J. J. Budge, Manager, James Budge Pty., Ltd., Sydney, Australia sent in his annual remittance and advises us that he will be touring the United States in May or June and intends to visit with chapters at Vancouver, San Francisco, Los Angeles, St. Louis, Chicago, Detroit and Pittsburgh.

J. O. P. Mumford with the Imperial Tobacco Co. of India, Calcutta, forwards three questions for Professor Venemann's Question Box. Geo. T. Crawshaw, Hamilton, Ontario, Canada also sent in a question for the Professor. J. W. Stockham and Wm. T. Fitzgerald, associated with W. A. Bernd at Terminal Refrigerating and Warehouse Co., Washington, D. C. also sponsored a little bookkeeping at national headquarters.

We have also heard from Mr. Harry R. Katzen, Manager and Operator of the Cheltenham & Jenkintown Ice Companies, Mr. C. F. Kaus of the Winnebago Cooperative Creamery up in Minnesota, and Mr. Robt. S. Wood of Belle Glade, Florida. Another of our members, A. T. Stephenson, Manager of the Puritan Ice Co. at Atascadero, Calif. reports his plant up for sale, one of four plants operated by Puritan in the state of California.

More members in Canada sent in dues this month, including R. J. Heartwell of Sarnia Ice Co., Ont. Mr. L. F. Heartwell took a withdrawal this year. E. P. Driscoll of Moncton Ice in New Brunswick, S. Houle of J. A. Thibault, Ltd. of Montreal, Quebec, and Mr. K. V. Parandjape of Bombay, India, were heard from.

More remittances came in from the eastern seaboard: from T. S. Patterson at Tri-State Engineering and Sales, Salisbury, Md.; Louis C. Roesel of the Georgia Ice Co., Savannah; W. H. Burton of Baltimore, Md.; and Claude Brewer of Long Branch, N. J. Frank Welby also wrote from Jacksonville, Fla. acknowledging receipt of some clippings which he had requested last month. Dale Logan with Terminal Ice in Nampa, Idaho, sent in his dues, as did H. Aveldson of Omak, Wash.; S. G. Galvan of Central Power and Light Co., Crystal City, Texas; Allan O. Lawrance, Sitka Alaska; Wm. C. Ludwig, City Products Co., Toledo, Ohio; Al B. Schumaker, U. S. Cold Storage Co., Omaha Nebr.; Wm. R. Robinson, Ohio Galvanizing & Mfg. Co., Niles Ohio; and Roy E. Withers, Jr. of Arlington, Va. who also had a question on the basic refrigeration course.

John J. Dolan of Crystal Ice Co. of St. James, New Brunswick, Canada dropped us a line and we are pleased to hear from George O. Paterson, President of Artic Ice Co. in Brantford, Ontario. Mr. William F. Riley, Geneva Refrigerating Company was also heard from. John Pondish writes that he is now retired from the seagoing carrier as a refrigeration engineer in the Merchant Marine. He is currently employed by Carrier as a service engineer on marine vessels in New York Harbor, and is taking the New Jersey refrigerating engineer examination.

[illegible] Department

Walter D. Houst, treasurer and consultant for Butler Warehouse Inc., Brooklyn, obtained a cloth bound edition of Guy R. King's book when he remitted earlier in the month. Filadelfo Tugade, Santa Cruz, Manila, Philippine Islands, acknowledged receipt of December and January issues of ICE AND REFRIGERATION. Many convention attendants at Dallas last year will remember Harry D. Jefferson, supervising engineer for Dole-Hawaiian Pineapple Company, Honolulu, who sends his best wishes to the membership.

It is reported that William P. Sterling, superintendent of refrigeration at the air force base, Fort Richardson, Alaska, joined the RSES Chapter at Anchorage in February. How about an Alaskan NAPRE chapter, Bill? Dean Emerson, president at MMM Inc., Houston, not only remitted his dues but sent along an order for a half-page advertisement in our 1953 Operating Data book.

Maurice E. Anderson of J. E. Hall Company, Ltd., Refrigeration Specialists, London, England, got after national headquarters about certain missing sections of his course and his Operating Data Book. It often takes considerable time before this material reaches our foreign members and even more frequently the material goes astray. These fellows outside of the United States really have an interest in the refrigeration game.

Three new members-at-large elected to membership this month were John W. Werkle, Jr., with Consumers Ice & Packing Company, Lancaster, Penna.; Benjamin Deliso, Pioneer Valley Refrigerated Warehouse, Inc., Springfield, Mass.; and Virgil Breshears, U. S. Air Force Base, Fort Richardson, Alaska. Werkle was recommended by C. L. Snavely, President, and Milton Rambo, chief engineer of Consumers. Deliso was endorsed by Howard L. Forman of Baker Refrigeration Corp., and P. J. Saylor of Birds Eye Foods. Virgil Breshears gave as references J. P. Congdon, President, Boise Cold Storage Company, Ltd., and William P. Sterling, his boss at Fort Richardson. We welcome the above members-at-large and congratulate them on being elected to membership.

Plans Under Way for 44th Annual Convention

THE President of the Chicago Chapter, Bert C. McKenna, a Director of NAPRE, has been appointed General Chairman of Events at the 44th Annual Convention, it was announced by Alvis J. Clay, President. Mr. Clay also announced that arrangements for the Educational Program at the Convention would be by Professor H. G. Venemann of Purdue University. Mrs. Venemann was appointed Head of the Ladies Committee.

The Convention will honor Professor Venemann for his thirty years of

membership, the last ten years of which he has been Chairman of the National Educational Committee. Professor Venemann retires at the close of the University term in 1954. Therefore, the Board of Directors of NAPRE decided that Purdue University was a very appropriate location for the 44th Convention.

An outstanding educational program is under way, according to Mr. McKenna, and the Professor. Original members of Professor Venemann's Educational Committee in 1942 are returning to Purdue to assist in the program. Such members as John Hawkins, U. S. Army Corps of Engineers, San Francisco; Harry T. Holbrook, Union Ice Company, San Francisco; Bob Doremus, Detroit Ice Machine Company; Ken Holaday, Anheuser-Busch Inc., St. Louis; Tom Baker, "Refrigeration" magazine and International Correspondence Schools, Atlanta; Walter Bernd, Terminal Refrigerating and Warehousing Company, Washington, D. C. have indicated a willingness to appear on the program. There will also be a number of other outstanding authorities in the refrigeration field, including several of Professor Venneman's associates at Purdue University.

Know Your Officers

THIS column over the past few months has given short biographies of our National Officers and Directors. Two more directors who make up the total of six are Hubert Branham and Frank L. Chase.

The great Northwest is represented by Hubert Branaham, who had been Sergeant-at-Arms in our Association over quite a few years. Mr. Branham is a graduate of Siebel Institute of Technology, Chicago, and a member of NAPRE since 1924. Hubert has had quite a varied experience, beginning in 1918 with the Union Light & Power Co. in Kansas as a shift engineer. He left that firm to go with Allis-Chalmers for a few years where he gained experience in electrical work before joining the far-flung engineering personnel of the Pacific Fruit Express Co.

This director was a plant manager for Pacific Fruit Express at Council Bluffs, Iowa from 1922 to 1925. He became the district engineer for the firm in 1925, which position he held until 1944 when he became the superintendent of refrigeration at Pocatello, Idaho.

Herbert Branham, Pocatello, Idaho

Frank L. Chase, "Junior" among the Board of Directors, makes his home in New Orleans where he is the Educational Chairman and Sergeant-at-Arms for Louisiana Chapter No. 2. Frank is building superintendent and chief engineer of the Hibernia Bank Building, the tallest building in the City of New Orleans. His engineering experience also started in 1918 in New Orleans, La., as a fireman and oiler in stationary plants. Later that year, he shipped out with the United Fruit Company where he filled successive billets in the engineering department until he became chief refrigeration engineer.

In 1925 he left the "fruit boats" and became chief engineer for Republic Ice Co. where he stayed until 1938, before taking his present position. This director has been Chairman of the Board of Examiners for Operating Engineers for the City of New Orleans for the past three years, and has been a member of the Board for a total of five years. His father, Frank B. Chase, was one of the engineers who organized Louisiana Chapter No. 2.

Frank L. Chase, New Orleans, La.

Refrigeration and Air Conditioning Offered by California Polytechnic

THE California State Polytechnic College at San Luis Obispo, California, announces a curriculum in Refrigeration and Air Conditioning Engineering. The school year is arranged by quarters and another course will start in the Fall of 1953.

In order to obtain a degree, a candidate has to complete a minimum of 210 quarter units, three quarters of which must be spent in residence, the last two quarters in residence prior to graduation. The course is arranged for earning seventeen to eighteen units per quarter. The average cost per quarter is $140, including books, supplies, laboratory fees, board and room, etc. Veterans' costs run $90 per month. Family housing is available.

Freshmen subjects include drafting, sheet metal practice, welding, mathematics, calculus, physics, and a language; Sophomore year offers heating and ventilating practice, general codes and wiring practice, electricity, calculus, physics, chemistry, thermodynamics, sound, and an elective. In the Junior year students in this course study plumbing and building sanitation, refrigeration engineering, materials, fluids, heat transfer, thermodynamics of refrigeration, statics, dynamics, public speaking and economics; for seniors the subjects are thermodynamics of air conditioning, air conditioning engineering, family psychology, civics, literature, commercial law, U. S. History, and electives.

Professor Harold H. Hayes, a member-at-large, NAPRE, is Dean of the School of Engineering at California Polytechnic. He was formerly affiliated with San Jose Chapter as Instructor. Professor Hayes is co-author of "Maintenance and Operating Procedures for Cold Storage Plants," a paper given at the 43rd annual convention of NAPRE at Dallas in 1952.

THE ICE INDUSTRY

NATIONAL ASSOCIATION OF ICE INDUSTRIES

Executive Offices
1706 L St. N.W., WASHINGTON 6, D.C.

Executive Secretary
GUY W. JACOBS, WASHINGTON, D.C.

President
WM. J. AYERS, MEMPHIS, TENN.

First Vice-president
PAUL H. ANDRES, OKLAHOMA CITY, OKLA.

Second Vice-president
E. L. GUNN JR., ATLANTA, GA.

Treasurer
GEO. STEERS, JR., KALAMAZOO, MICH.

THIS MONTH IN BRIEF

Before instituting a safety program the Colonial Ice Company, Greensboro, N. C. had a very poor safety record and insurance rates were correspondingly high. In 1948 a threefold plan was put into effect, under which employees became safety conscious and results are now being reflected in reduced insurance rates.

The 62nd annual convention of the Southwestern Ice Manufacturers Association was held at San Antonio, Texas April 9-10 with a good attendance and an interesting program.

A Spring conference was held by the Canadian Association of Ice Industries April 14. Attracting more efficient help, delivery services, selling refrigerators and advertising were some of the subjects discussed.

Annual meetings are reported also of the New England Ice Association, Illinois Association of Ice Industries, Eastern States and Virginia Ice Associations and The Mountain State Association of Ice Industries.

Safety Program Reduces Accidents and Insurance Rates

D. M. Howell, Vice-president
Colonial Ice Co., Greensboro, N. C.

WE ARE very much interested in doing something regarding the bad safety record of the ice industry. Before the early part of 1948 we had done very little toward organized safety work in our organization, and by that time our insurance carriers were so disgusted with our record and our rates were getting so high that the management decided to do something about preventing accidents. Our loss ratio at that time was approximately 85 per cent, i.e., our insurance carrier was spending 85 cents out of every $1.00 premiums we were paying in settlement of claims. Our premiums were well above normal rates.

Under this impetus, we put in the three plans described below. In addition we started insisting that our employees wear safety shoes. We do not furnish the shoes but purchase them at wholesale and sell them to our employees, and at times we do get as much money back on the shoe account as we put into it, but most of the time this account checks up short. However, safety shoes have done a lot toward improving our accident record and we will again this year buy several hundred pairs.

We purchase and give to our employees once each year a small safety button, indicating the number of years they have worked with the company since being involved in an accident. Some classes of employees are very proud of their safety button while others are not impressed too much, but all of them are interested in receiving cash awards.

We hold regular safety meetings and show some type of safety film with our own equipment. Some of the films we get through the National Association of Ice Industries and others we are able to secure from certain oil companies, telephone companies and others in the area interested in the promotion of safety. It has been necessary on a few occasions to discharge employees who would not do their work in a safe manner, but as a whole we have been able to get our employees safety conscious and the results of our four years work on an organized safety plan are now being reflected in our insurance record.

The Sweepstakes Plan

Everyone likes to play a game and most drivers like to gamble a little, especially if it costs them nothing when they lose. The sweepstakes plan furnishes just such an opportunity and it has been very popular.

In this plan a nominal cash prize is furnished monthly by the insured. Since the average cost of accidents to the insured is $75 and up, he should be willing to invest $5 to avoid an accident. In setting up this game, the first thing is to determine the average number of accidents reported monthly. In a fleet reporting one accident a month, the maximum prize would be $5; for two accidents a month, the maximum prize would be $10; for three accidents, $15, etc. The maximum prize, however, is reduced each time an accident is reported. Thus in a fleet reporting five accidents a month, the prize would be as follows:

0 accidents reported—$25 prize for the month.
1 accident reported—$20 prize for the month.
2 accidents reported—$15 prize for the month.
3 accidents reported—$10 prize for the month.
4 accidents reported—$5 prize for the month.
5 accidents reported—No prize for the month.

It is evident, therefore, that the insured pays only for the accidents that are actually prevented.

All drivers who have worked the full month and have had no accidents

during that 30 day period are given numbers that will be used in the drawing of the prize. Any new driver who has not completed his first month of service with the insured is barred from the drawing. Any driver, furthermore, who has had an accident during the month is barred from the drawing for two consecutive months.

At the end of the month, on the day appointed for the drawing, each eligible driver is given a number and duplicate numbers are placed in a hat. After carefully stirring the slips in the hat, the winning number is drawn and the prize is awarded to the driver who holds that number.

This plan not only works up the enthusiasm of the drivers, it also appeals to the insured. In several cases insureds, after carefully studying the reductions in cost of repairs to their vehicles damaged in accidents, voluntarily increased the prize from $5 to $10 an accident and they still made a good profit from safety.

Frequently the total prize money is split into two or three prizes of varying sizes in order to give more drivers a chance to win. It will depends upon the amount of money the insured is willing to spend on this incentive plan and the number of drivers in the fleet.

Incentive Plan for Truck Drivers

The following described plan became effective as of June 1, 1948, and applied to all truck drivers operating trucks belonging to the company. To qualify as a truck driver, a man must operate a truck not less than 24 days in the particular month covered.

The Company provides a cash award to drivers who operate their trucks for a full month without becoming involved in an accident. The amount of the cash award to be divided is determined as follows: A fund will be accumulated in the local office at the rate of $1.50 per month per truck at each operation with a minimum of $7.50 at plants where as many as three trucks and less than five trucks are in service. A truck month is defined as being not less than 24 or more days of operation in any one month. When two trucks are operated only 12 days each during the month, they may be consolidated and considered as one truck month. In other words, a truck must be exposed and in service not less than 24 days before it can be considered a truck month.

The division of this fund is optional with the local manager. The money can be divided equally between each eligible driver or there can be a drawing with one, two or three prizes. This fund is penalized by the sum of $5.00 for each accident involving a truck or a driver during the month in question. This does not mean that to be termed an accident that damage has to be done to some other person's property or that some one other than an employee has to be injured, but if there is an injury to our employee or damage to our equipment, it is considered an accident and the fund will be penalized by $5.00 and the driver involved is to be barred from the drawing for that particular month.

This prize money is not to be considered as extra compensation and is to be given out at a drawing in the presence of most of the employees immediately after the end of the month but at some time other than on the regular pay day.

Incentive Plan for Other Personnel

The following plan became effective June 1, 1948, and was intended to cover all employees of Colonial Ice Company other than administrative, clerical and truck drivers. Cash awards are distributed from time to time to various employees working in and around the plant and on the coal yards, who are interested in the accident prevention program and can and will do a safe job every day.

This fund is to be accumulated at the rate of $1.00 per month per man at each operation with a minimum of $5.00 at plants where more than three but less than five employees are involved. A man month is defined as being a minimum of 25 full days in any one month. No employee will be eligible and cannot qualify unless they have worked a minimum of 25 days in the particular month.

The division of this accumulated fund, as in the case with the truck drivers, is optional with the local manager. It will be penalized by $5.00 for each accident involving an employee. An accident is defined as being such when an employee is injured on the job or when some individual other than an employee of the company is injured in or around the plant or when some damage to the equipment or to the equipment of others caused by some careless act, and any employee involved in such an accident is to be barred from the drawing for that particular month.

This award money is not to be considered as extra compensation but it is intended to stimulate interest in the accident prevention program. It is to be given out at a drawing in the presence of most of the employees immediately after the end of the month.

Patent Granted on Mobile Ice Plant

A PATENT was granted recently to H. O. Warlick, 6421 N. Washington Blvd., Arlington, Va., covering a "self-contained mobile ice manufacturing plant comprising a vessel having ice production and storage compartments and automatic leveling mechanism."

The object of the invention is to provide a plant which can be used in one location as long as desirable then move readily to another vantage point, particularly to locations where year-round facilities are not justified, and in warmer climates where seasonal harvest of perishables or seafood require an abundance of ice and storage capacity in and during a relatively short time.

While the patent was granted only recently, a plant covered by the patent has been constructed and operated along the Atlantic Coast and in the Gulf of Mexico.

Ice on The Radio

THE CBS "Hallmark Radio Hall of Fame" program on Sunday, May 17, at 9:00 p.m. Eastern daylight time broadcasted a script titled "Ice King" on a 190-station coast-to-coast hookup.

With Lionel Barrymore as the host-narrator, "Ice King" told the story of Frederic Tudor, who pioneered in transporting ice to southern United States, the tropical West Indies, and ultimately to the far corners of the globe.

The great contribution of ice to mankind, used for the preservation of foods and medical supplies, and the part it plays in present day living was spotlighted on this broadcast.

New Jersey Curbs Disposal of Ice Boxes

GOV. Alfred E. Driscoll of New Jersey has signed a bill making it an offense, under the Disorderly Persons Act, for anyone to abandon a refrigerator in any place accessible to children. The law was prompted by a series of tragic accidents in which children, playing in the old boxes, shut themselves in and were suffocated.

Reports from Unit Ice Associations

Southwestern Convention Offers New Ideas and Confidence in Ice

THE 62nd annual convention of the Southwestern Ice Manufacturers' Association opened on the evening of April 8, 1953 at the Gunter Hotel in San Antonio, Texas. Registrations and exhibits were opened during the afternoon and the convention got off to a good start with a gratifying number registered during the afternoon. A pleasing innovation in the program this year consisted of a Cocktail Hour and general get-together. Beginning at 5:30 in the afternoon, it lasted until well into the early evening.

Opening Session

On Thursday forenoon, April 9, President Ralph H. Irvine, Home Ice Co. Palestine, called the convention to order promptly on schedule. A warm welcome was extended to the convention guests by their own well loved member, Elmo McGee of San Antonio.

This was followed by the address of President Irvine. Under the title "Looking Two Ways From Here," he gave a factual, down-to-earth picture of the present industry situation as he sees it. He reviewed the trends during the last several years and called to mind warnings issued on previous convention programs. He also gave an encouraging and inspiring picture of the possibilities for the industry in the seasons ahead for those who will put their shoulder to the wheel and work for the results that he feels confident can be obtained. He set the proceedings in motion with a note of encouragement and confidence in the industry in which he and his family have played such a vital part in this section of the country.

Finances

This was followed by the report of the Association's financial situation given by Jacob M. Irvine of Dallas, treasurer. Mr. Irvine gave a factual statement of the situation confronting most of the ice associations at this time. He gave the membership warning of what they face, but at the same time pointed out the business course that must be followed and made a forceful appeal for loyalty and support of the Association.

The first session's program was rounded out in an appropriate and forceful manner by National Secretary, Guy W. Jacobs. With his usual enthusiasm Mr. Jacobs gave a clear cut picture of the work and activities of the National Association, what that Association has endeavored to accomplish during the preceding year and what they hope to accomplish in the year ahead, with a summing up of the industry's situation as he saw it from the National level.

W. C. Stevens, Omaha, Tex.
President Southwestern Ice Manufacturers' Association

Another innovation on the program for this Convention was a talk by a prominent specialist under the title "Fit to Live". Dr. W. W. Bondurant, an eminent heart specialist in San Antonio, impressed his audience with the vital and critical phases of the requirements for happy and healthful living in these times when everyone goes under such high pressure.

Visits to Markets

The Thursday afternoon session was presided over by immediate past president, Roy A. Stamps, of Gainesville, Texas. The first number on the afternoon program was a report on visits to out of state markets given by Obert K. Irvine of the Southland Corporation, Dallas. In company with Howard Campbell (now deceased) of the Southland organization, Obert Irvine had made intensive visits to markets in St. Louis and in California. On these visits Mr. Irvine had secured a collection of excellent colored slides showing the various operations in these markets. These slides were shown, accompanied by comments by Mr. Irvine.

This presentation was supplemented by a report given by Claude R. Martin of the Southland Corporation, Dallas, who for many years has been in charge as route superintendent of the city delivery in Dallas. He reported on important practical phases of ice operations, as he had found them on a visit to Kansas City.

E. W. Franke, Corpus Christi
Vice-president Southwestern Ice Manufacturers Association

This part of the program was followed by a discussion period which brought out many interesting facts and phases of the distribution operations of the ice business.

Disguised under the title of "More and More and Worse and Worse" W. F. Leonard Jr. director of safety and insurance for the Southland Corp. Dallas, Tex. discussed accident prevention and related subjects. The facts presented by him were backed up by graphic illustrations, both by picture and charts.

This session was closed with an address by Harrison Wood, vice-president in charge of public relations of the Red Ball Motor Freight Lines with headquarters in Dallas. From a background of his experience as a world traveler and news analyst, Mr. Wood presented sound and seasoned opinions upon the most fateful and critical factors of contemporary American life.

Entertainment

While this session was in progress, from 3:00 to 5:00 the ladies of the convention were enjoying a Tea given in their honor by Mrs. Ralph H. Irvine, wife of the Association's President. The setting was the colorful North Terrace of the Gunter Hotel, which was pleasingly decorated for the occasion. A lovely style show was presented by Joske's of Texas.

On Thursday evening, beginning at

7:30, the convention was the guest of Elmo McGee and the other San Antonio ice manfacturers for an informal out-of-doors party on the beautiful grounds of the Lone Star Brewery. The grounds presented a lush, tropical setting and the weather was balmy and delightful. Tables were set under the stars and a delicious buffet meal of Mexican foods of all kinds were served. A band of strolling Mexican troubadours wandered throughout the crowd during the evening presenting typical Mexican ballads.

Officers Elected

On Friday, the forenoon session was presided over by W. C. Stevens of Omaha, Texas, association vice-president and president of the Northeast Texas Ice Company. The first order of business was the election of officers. The following slate of officers were elected to serve for 1953.

President, W. C. Stevens, Omaha.

Vice-President, E. W. Franke, Corpus Christi.

Directors to serve for one year: Frank B. Alderdice, Dallas, R. D. Borden, Junction, E. E. Irwin, Columbus, Edward M. Muse, Fort Worth, H. N. Pierce, Dallas.

Directors to serve for two years: Don Kennemer, San Angelo, Elmo McGee, San Antonio, Frank Rand, Jacksonville, T. D. Meacham, Monahans, Ed Williams, Denton.

Acting Treasurer, Jacob M. Irvine, Dallas.

Counsel, Preston A. Weatherred, Dallas.

Secretary and Assistant Treasurer, Burdette Binnings.

Forum Discussion

A panel and open forum discussion was then presented by association officers and directors, directed by Gen. Weatherred. Subjects which had been accumulated through correspondence were discussed, touching on levels and spreads in price scales, sidelines, processed ice, poultry processing, domestic ice deliveries, vending machines. This proved a very interesting part of the program and time ran out before all of the subjects could be fully covered.

Final Session

The afternoon session was presided over by retiring President Ralph H. Irvine. The questions and answers and general floor discussions continued for perhaps an hour and a half. The program was then brought to a close by the address of the honor guest of the convention, J. C. Thompson of Dallas, president of the far-flung Southland Corporation.

Mr. Thompson pointed out that the industry has been going through a period of radical readjustment. Out of this readjustment could come renewed determination and faith, given leadership with courage to set the pattern of thought and action necessary to the demands of the times. With respect for its significance as an important industry, Mr. Thompson's talk to the convention crystalized and epitomized all of the industry's problems and experiences of recent years, pointing out, among other things, that a $30,000,000 business reflected in the Texas Ice Industry is not one to be thrown to the dogs. Warm, deep and sincere expressions of appreciation were given Mr. Thompson at the close of his very fine and forceful talk.

The session was turned back to President Irvine, who adjourned the business part of the convention on a note of renewed confidence and hope for the future.

President's Annual Dinner

The traditional annual dinner honoring the president and officers of the Association was held in the attractive Crystal Ballroom of the Gunter Hotel. Throughout the dinner hour music was supplied from a Hammond organ by Charles E. Hunicutt, staff organist of the San Antonio Music Company.

A new note of color entered this event this year. The program for the convention had been carried out in the Mexican colors of red, yellow and green. The speaker's table was decked in a flag-red skirt. The flowers decorating this table consisted of a beautiful center arrangement carrying out the red, yellow and green colors, with smaller arrangements and candles supplementing the decorations for the rest of the table.

In this atmosphere of sentiment and affection was presented to President Ralph H. Irvine the traditional certificate of appreciation for his contribution to the Texas Ice Industry during the preceding year.

Dinner was followed by a floor show presented by Eduardo Martinez and his International Orchestra, which included colorful songs and dances typical of the Mexican atmosphere. After the floor show dancing continued until past midnight.

While the attendance of this Convention was a little below that usually experienced in this region, nevertheless it was pronounced one of the most successful and inspiring ever held by the Southwestern Association.

Canadian Spring Conference Covers Ice Problems and Plans Advertising

MILDRED E. CROFT, Exec.-Secy.

THE spring conference of the Canadian Association of Ice Industries Inc. held in Burlington, Ontario, on April 14, was well attended and the open forum of the morning session proved to be extremely interesting. As a matter of fact, there was so much discussion on the items in the morning program that it was not possible to cover all questions on the program.

It was determined that the greatest problem facing the industry at the present time—particularly in Ontario—is the difficulty in attracting men suitable for ice delivery. It was agreed that one of the most serious difficulties in obtaining good employees is the fact that most of the industry operates on a six day week and that the industry is not able to compete with companies whose employees work on a five day week.

It was also felt that while the yearly pay for route salesmen was adequate, some method for a higher guaranteed weekly remuneration should be evolved to keep the earnings at an attractive weekly level.

There was considerable discussion on company operated routes versus peddlar operated routes, with most of the larger companies favoring company operated routes and the smaller companies favoring peddlar operated routes.

In the afternoon session there were several plans suggested for selling refrigerators. In order to combat the 50 cents per day meter plan as advertised by a number of appliance stores, it was suggested that ice refrigerators be advertised for sale on a 10 cent per day basis with collection being made once a month. It would take about two years to pay for a refrigerator but from a merchandising standpoint it was felt that the offer of a 10 cents a day for a refrigerator would have a great deal of appeal.

Some companies are using a form of bank calendar whereby the customer inserts a coin in the bank to

change both the month and the date and in this method, the customer saves up her payment for the refrigerator on a 10 cents a day basis and collection is made once a month by the customer.

School for Icemen on Meat on Ice Displays

A meeting was held in Kitchener, Ontario, on May 7 where a school for the instruction of icemen on the setting-up of Meat-On-Ice displays was conducted. A refrigeration man was in attendance to explain exactly how the mechanical counter should be adjusted for the ice display and several merchants who are already using meat-on-ice were present to make known their findings to the Icemen.

Ice Advertising

At a meeting of our Directors held in the Royal York Hotel on Monday, April 13, 1953, Chairman Hillmer of our Advertising Committee reported the sum of over $7,000 has been subscribed to Canadian Ice Foundation's 1953 program to date, and that with expected support from several large regular subscribers, principally in Western Canada, the available money should reach $10,000 for this year's national advertising.

The 1953 Canadian Ice Foundation Spring campaign will be projected to three separate and distinct markets:

1—Mass market publications—Star Weekly and Week-End Picture Magazine will carry block ice and refrigerator advertising throughout May and June. Theme will be "Ice refrigeration costs less—gives more," and low prices of ice refrigerators will be emphasized.

2—Average and higher income markets will be reached through the two national women's magazines—The Chatelaine and Canadian Home Journal—and will promote processed ice exclusively. May theme will be "Party ice"—June will feature "Iced Vegetable Displays" and July "Ice for Picnics." Reprints of these advertisements have been offered subscribers for local use.

3—Commercial ice market will be promoted through the Canadian Grocer—the leading grocery and produce trade paper having a circulation throughout Canada of more than 7,200 copies per issue. June 1 issue will feature "Meat-On-Ice"—July 1 "Salad Week and Iced Vegetable Displays" and August 1 will be a combination of all types of iced displays.

Recently the Association produced a quantity of "Iced Vegetable Display" bulletins which are now available for members' use.

New England Association Annual Meeting

RAYMOND WILBER, SECRETARY

THE Annual Meeting of the New England Ice Association was held April 16, 1953, at the Kenmore Hotel in Boston. The interest shown by those who attended, proves that present method of conducting these meetings is being received with increased approval. We were pleased to see several members of the industry with us again after long absences. We were also happy to see the increase in those attending from Connecticut. We believe this increase in attendance is due largely to our round-table discussion type meeting.

The meeting opened with an engineer's session with the discussion being led by Walter Davis of the York Machine Company. This session continued for an hour, and many engineering problems were discussed. Some of the members brought their own problems to this meeting and received valuable advice. These sessions on engineering have always developed a very intense interest, and our allotted time for this session always seems too short.

The National Association was unable to have a representative at the meeting, but was still very strongly represented through the cooperation of our National Secretary, Guy Jacobs who forwarded a very fine address which covered quite extensively the activities of the N.A.I.I. for the past year and a look into the future. This message was read by the secretary, and many of the items reported were of vital concern to the members.

Mr. Carroll Thacher, past president who had attended the National Convention last fall in Cincinnati, gave a brief report covering the high lights. Mr. Thacher told the group that this was one of the best conventions he had ever attended, both from a business and social standpoint. He urged all members present to plan to be at the meeting in Washington in November, and find out then what the rest of the country is doing to maintain tonnage.

At 12:30 the group adjourned for luncheon which is always a very enjoyable part of the meetings. Here the members have a chance to exchange ideas and talk over old times. Our one day program is so full that the luncheon hour is the only time for sociability.

Following luncheon, the meeting was called to order by President Hogan. The first subject to be discussed was meat icing, presented by Warren Pierce of the Red River Associates of Harwichport. Warren had prepared a very fine presentation which included the motion picture "Meat Icing" as well as the books that have been prepared on this subject. This is the second presentation we have had on this subject, and we have yet to learn whether anyone in our New England territory is doing any promotion work on this new field of ice consumption. Other cities are doing very well with meat and poultry icing. However, the idea will not sell itself, and we in New England cannot expect the other sections of the country to do our work for us.

Election of Officers

Election of officers resulted in the following:

Louis Richer of Manchester was elected a director to fill the unexpired term of Richard Painchaud of the Concord Ice Company, who has gone out of the ice business. Warren Pierce was re-elected for a three-year term as director. The board then elected the following officers for 1953-54:

President, Peter F. Hogan, Springfield, Mass.

Vice-presidents, Louis Richer, New Hampshire; Leon Whitman, Vermont; Moe Widrowitz, Connecticut; Edward Kenney, Massachusetts; George Breen, Rhode Island; Ralph Getchell, Main.

Secretary, Bernard Hogan, Springfield, Mass.

Treasurer, Charles Larsen, Somerville, Mass.

Charles Larsen gave his report as treasurer which was accepted and placed on file. The board voted to hold another meeting in June.

It was suggested that inasmuch as many of our members are interested in frozen food locker plants, and as there seems to be no association of such individuals, that we invite these locker plant people to meet with us.

Following the board meeting, the meeting of the Association was continued with an open discussion on the following subjects: vending machines, processed ice, diversification, storage, local advertising and deliveries.

Illinois Association Annual Convention

WM. D. WRIGHT, Secretary

THE annual convention of the Illinois Association of Ice Industries was held at Mt. Vernon April 24. Attendance was off a bit but the interest maintained its usual high mark.

This one-day meeting was a modified form of the usual Illinois convention. The appointment of committees, reports of committees and officers, election of directors and other business necessary to be transacted was kept to a minimum so that most of the time could be used for a "brass tacks" conference on developments in the ice business and ways and means of meeting practical problems.

National Program

Guy W. Jacobs, secretary of the National Association of Ice Industries was present and presented the national program of activities and summed up prevailing trends in the industry.

David R. Cornish, Monroe City Ice Company, Monroe City, Missouri, who served many rural communities through the medium of refrigerated stations and venders gave a very interesting presentation of this phase of the ice business.

In an impromptu address, George Heath, manager, Oscar Mayer Ice Service, Madison, Wisconsin, talked on the obligation which icemen owe their trade association, and also told of his experience with coin operated venders.

The remainder of the session was spent in conference type discussion and followed closely the outline of suggested topic sent out to members preceding the convention.

Two meetings of the Board of Directors were held, committees were appointed and their reports received and three directors were elected. The following officers and directors will serve for the ensuing year:

Officers:

President: John Purcell, Jr., Murphysboro.

Vice-president: James Oldani, Springfield.

Secretary-Treasurer: W. D. Wright, Clinton.

Directors: H. R. Tolle, Mattoon; W. D. Graydon, Chicago; John Purcell, Jr., Murphysboro; James Oldani, Springfield; Harold T. Smith, Champaign; Everett Smith, Anna; J. P. Maguire, Decatur; George Heath, Madison, Wis.; Jack Smith, Galesburg.

Eastern States—Virginia Joint Convention

THE joint convention of the Eastern States Ice Association and the Virginia Ice Manufacturers' Association was held at the Chamberlin Hotel, Old Point Comfort, Virginia, April 9 and 10, 1953.

Iceman's Clinic

The theme of the convention was "The Icemen's Clinic" with an opening talk, and incidentally one of the best we ever had, "Serve Yourself" by R. C. Muckerman, St. Louis, Mo. This was followed by a panel discussion, "The check-up at the Icemen's Clinic" with J. H. Hoffberger, moderator; Panel members were Wm. Pauley, Ice Delivery Sales; R. C. Muckerman, Vending Ice Sales, and Erie Wavstrom, Engineering Problems.

The second session consisted of talks by the following speakers, Wm. T. Jobe, N.A.I.I., Washington, D. C., "Washington Three Months After"; R. F. Butler, Richmond, Virginia, "Beware"; O. A. Reardon, Alexandria, Virginia, "The Iceman in his Community"; and Prof. Davis, San Francisco, California, another very outstanding contribution, "Here's Proof".

On Thursday evening the annual cocktail party and banquet was held, and this was followed by dancing and a floor show.

At the business session of the Eastern States Ice Association the following directors were elected:

Directors

Aubrey S. Bowen, Binghamton, N. Y.; Peter A. Buehrman, New York, N. Y.; Melvin J. Burnham, Pikesville, Md.; George M. Currie, Poughkeepsie, N. Y.; Eugene J. Doody, Bronx, N. Y.; Harry Goff, Shenandoah, Pa.; George O. Hendrickson, Salisbury, Md.; Charles Hoffberger, Baltimore, Md.; J. H. Hoffberger, Baltimore, Md.; Walter F. Hyde, Washington, D. C.; Lewis Jacobs, Hanover, Pa.; W. F. Larkin, Haverstraw, N. Y.; W. J. Lewis, Jr., Rochester, N. Y.; L. E. MacIntire, Chester, Pa.; Conrad Proebstle, Atlantic City, N. J.; O. Ashley Reardon, Alexandria, Va.; H. D. Sanford, Syracuse, N. Y.; H. Hammond Snyder, Alexandria, Va.; Wilmer Stradley, Wilmington, Del.; William P. Wagg, Philadelphia, Pa.; Gordon T. Wilson, Philadelphia, Pa.; and Horace W. Wilson, Camden, N. J.

At a meeting of the Board immediately after the convention session the following officers were elected to serve for the coming year:

Officers

President, H. Hammond Snyder, Alexandria, Va.

First vice-president, Aubrey S. Bowen, Binghamton, N. Y.

Second vice-president, George O. Hendrickson, Salisbury, Md.

Third vice-president, L. E. MacIntire, Chester, Pa.

Secretary-treasurer, Gordon T. Wilson, Philadelphia, Pa.

Mountain States Ass'n of Ice Industries

THE 36th Annual Spring Convention of the Mountain States Association of Ice Industries was held at the Brown Palace Hotel, Denver, Colorado, April 17-18, 1953.

This convention was held and conducted on the open forum plan with guiding of the subjects and the various angles directed by the following:

Building Up Manpower, L. L. Belcher, moderator.

Sales, Delivery, Stations, Henry Williams, moderator.

Accident Prevention — George S. Hallen, Director of Safety Service, Colorado State Compensation, moderator.

Engineers Session — Bob Belcher, moderator, Del Thompson and J. Bruce Espy, Panel. Automatic Controls, Plant Housekeeping, New Water Treatment. Proper Lubrication, Safety Precautions, High Speed Multiple Cylinder Machines.

Since the president, Henry Nadorff, was no longer connected with the ice business, Vice-president J. Bruce Espy took charge of the meeting. The attendance was a little more gratifying than a year ago.

Walter Elliott made an appeal for the next convention to be held at Albuquerque, New Mexico.

Officers were elected as follows:

Officers

President—J. Bruce Espy, City Ice Company, Denver, Colo.

Vice-president—Robert Belcher, Mountain Ice & Coal Co., Pueblo, Colo.

Secy-treas.—J. Reimer Espy, Espy Ice Company, Denver, Colo.

Regional president—L. L. Belcher, Mountain Ice & Coal Co., Pueblo, Colo.

Regional director at large—Frank W. Adams, Colorado Ice & Cold Storage Company, Denver, Colo.

Directors: Walter T. Elliott, Albuquerque, New Mexico; Bill Goan, Billings, Montana; J. T. Hughey, Greeley, Colorado; Waldo Todd, Santa Fe, New Mexico; H. B. McClusky, Rocky Ford, Colorado; D. E. Woodson, Cheyenne, Wyoming; Al. Seery, Belen, New Mexico.

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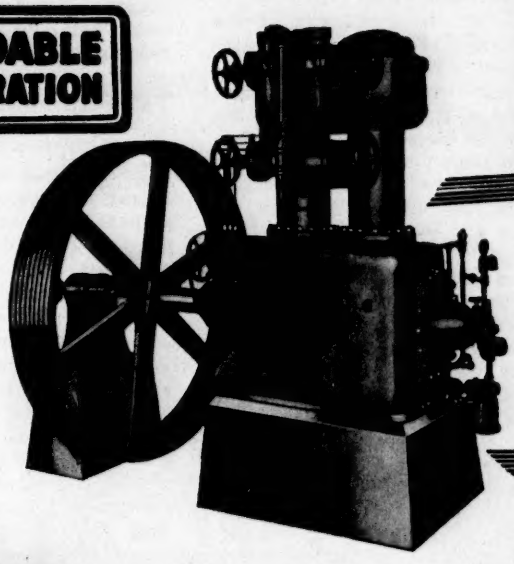

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AWA Convention

(Continued from page 17)

because of the complexity of the world situation and all peoples, business men, farmers, tax payers, citizens, and elected officers will have to face this world situation, the happenings in which have an important impact on all of us.

Among some of the encouraging features now are that through the Korean war we will probably have saved Asia, even though we have not yet won that war. Regarding the situation in the Kremlin, their strategy of world domination still remains. Their philosophies and objectives will not change and the present apparent softening comes as a result of their being defeated in their primary purpose and of being afraid of the Washington administration. If we in the United States have sense enough to stand firmly now we can win in this contest. They are willing to bide time now because they sense that they cannot win except under a long range program.

If business, labor, the farmers and all other elements of our people will hold their heads, within a reasonably short time they will find the national government getting on a more firm foundation. High taxation, he said, brings as a natural result corruption and inflation and balancing of the budget and reduction of taxes will result naturally in a more stable government.

TRRF Annual Meeting

(Continued from page 26)

been completed on a national scale. Reports on the results of 136 research projects have been published. Another division of its work, more recently developed, have been the regional training conferences conducted primarily for the warehouse workers and this has become especially valuable and appreciated. With this background of achievement, it can well be expected, he concluded, that the Refrigeration Research Foundation will go on to accomplish still greater achievements.

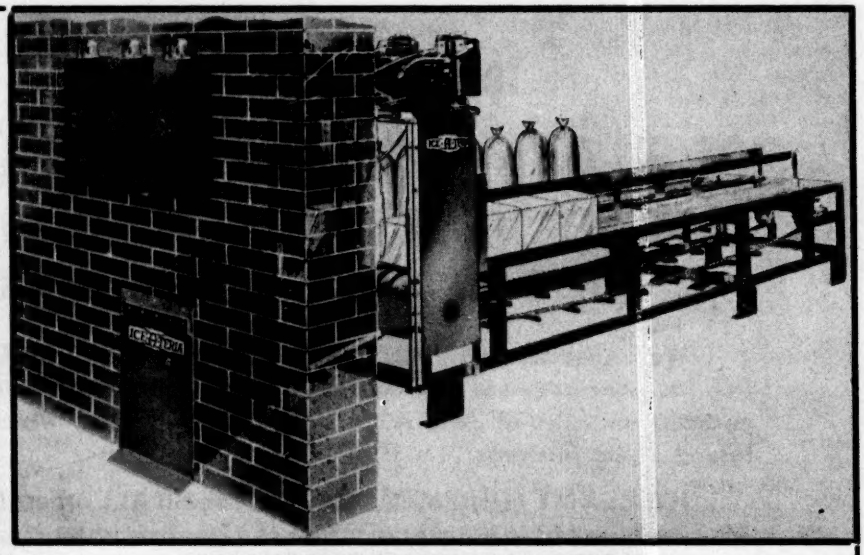
Herbert Farnsworth, president, made a short report. From the research and financial standpoint, he said, the Foundation has accomplished what it set out to accomplish, and much progress has been made beyond that. It now rests upon a broad and sound basis. All challenges have been met by Dr. Diehl and they were assured that future work will be well taken care of.

Reporting as treasurer, E. G. Erickson reported a considerable financial improvement over last year. Membership dues during 1952 exceeded those of 1951 by some $27,000, the total income amounting to $88,676.34. Total net assets at the end of 1952 amounted to $129,157.46. Since then, at the end of the first quarter of 1953 the net assets increased to $132,492.55.

Director Reports

Presenting an informal report, Director H. C. Diehl, elaborated on and reviewed some of the points covered in his printed report. This, along with the address of Dr. Prescott and the report of the treasurer, presented a good overall picture of the status of the Foundation. A late development in the work of the Foundation, he said, has been correlated studies, working in cooperation with other groups. These have been effective in broadening the Foundation's influence. He referred briefly to current projects now being developed, such as storage of bakery goods, plastics, and oleomargarine. It is becoming increasingly necessary, he said, to continue and branch out into new lines of research work, so the industry will not be left behind and will be in position of knowing all that can be known about what is going on.

SAVES LABOR



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Today, labor costs eat into your profits. The Perfection Ice-A-Teria, fully automatic vending machine, actually pays for itself from savings on labor. More than that, however, you can offer your customers 24-hour service. The Perfection Ice-A-Teria is adaptable to fill your needs. Write, wire or phone today for complete information.

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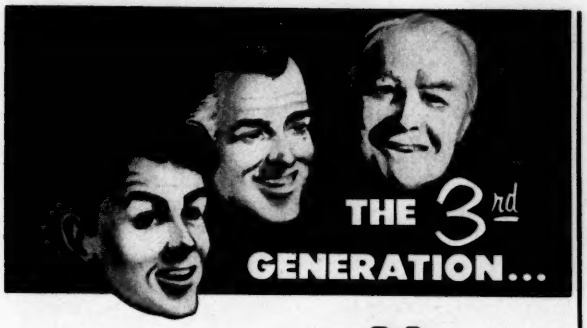

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NATIONAL

REFRIGERATION COILS

Seventy years old in 1953, NATIONAL has been growing up with—and serving—the artificial ice and refrigeration field throughout its history of progress.

Long since, *NATIONAL Refrigeration Coils* became standard in the industry, and today a third generation of users is specifying NATIONAL for smoothness of bend, perfection of welding, and accuracy of measurement.

Whenever you need coils, write for our free tracing-chart which shows standard dimensions ready to fill in. It will simplify your specifications—whether for zig-zag or nested box or conical or round-flat or reducing coils.

NATIONAL PIPE BENDING COMPANY

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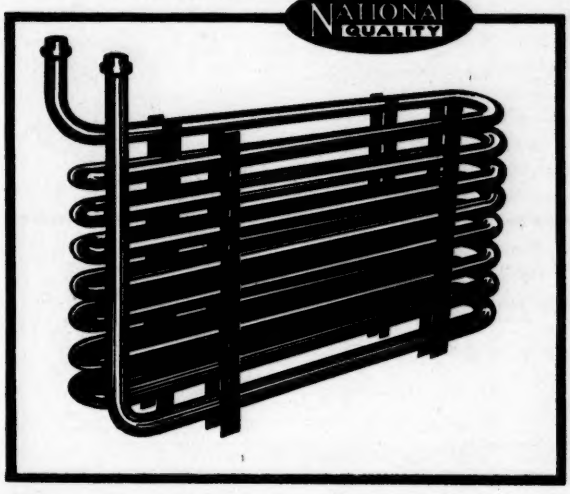

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You're sure of top quality and prompt delivery when you specify Solvay Calcium Chloride for brine making. In addition, you get the assistance of Solvay Technical Service on any special problem you may have regarding the preparation or care of your brine.

You get economy too when you use Solvay Calcium Chloride because this is the standard low-cost, low-temperature brine medium. Solvay Calcium Chloride promotes maximum life of your equipment and reduces the possibility of costly shut-downs and repairs. When you order, be sure to specify Solvay Calcium Chloride. Available for immediate delivery from dealers and warehouse stocks in principal cities.

FREE BRINE MAINTENANCE CHART . . . information on the preparation, strengthening and maintenance of Calcium Chloride Refrigeration Brine . . . and prices and location of nearest stock are available on request. MAIL COUPON TODAY!

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SOLVAY

SOLVAY PROCESS DIVISION, Allied Chemical & Dye Corporation
61 Broadway, New York 6, N. Y.

Please send me, without cost or obligation, your free Brine Maintenance Chart . . . information on the preparation, strengthening and maintenance of Calcium Chloride Refrigeration Brine . . . and prices and location of nearest stock.

Name.....

Company.....

Address.....

City..... *Zone*..... *State*..... 58 6

Buffalo Section ASRE Elects Officers

ROBERT J. HESS, assistant superintendent of the engineering department of the Buffalo Division of the Merchants Refrigerating Co., has been elected chairman of the Buffalo Section, American Society of Refrigerating Engineers. Other officers are: First vice chairman, Rueben E. Ott; second vice chairman, Ralph W. Talley; secretary, Robert Meyerhans, and treasurer, James Hickok. Carl Fagerstrom was named national director.

ASRE Summer Meeting At Lake Placid Club

A PERFECT setting for a combination technical meeting and vacation trip has been selected by The American Society of Refrigerating Engineers for its 40th Semi-Annual Meeting which will be held June 28-July 1, 1953, at the Lake Placid Club situated in historic Adirondack Mountains of New York state.

Among the entertainment features provided by the Convention Committee under the Chairmanship of R. A. Baker, Minneapolis Honeywell Co., Syracuse, N. Y. are: a fish fry and square dance; a sightseeing trip to famous Ausable Chasm and Whiteface Mountain; the traditional ASRE cocktail party and dinner dance, plus a "surprise" party Sunday evening.

The Program Committee, headed by J. Robert Hornaday, Deep Freeze Division, Motor Products Co., Chicago, Chairman and Walter A. Kuenzli, Crosley Division, Avco Mfg., Cincinnati, Vice Chairman, has provided a widely diversified list of papers of interest to refrigeration and air conditioning engineers.

The ever popular Domestic Refrigerator Engineering Conference, under the leadership of Russel W. Ayres, Seeger Refrigerator Co., St. Paul, is going to discuss various design features of the chest and upright home freezers.

The Air Conditioner Conference, Chairman Justin Neuhoff, General Electric Co., Bloomfield, N. J. will have for its topic, Residential Year-Round Air Conditioning—both conferences will have an open forum discussion led by a panel of experts in their fields.

Dr. Prescott Honored

DR. SAMUEL C. PRESCOTT of the Massachusetts Institute of Technology will be honored by the Institute of Food Technologists at their annual meeting in Boston, June 21-25. The Institute will present a citation to Dr. Prescott honoring him for his leadership in the application of science to food technology.

CONVENTION CALENDAR

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS
November 11-13, 1953
Purdue University, Lafayette, Ind.
J. RICHARD KELAHAN, Secretary

NATIONAL ASSOCIATION OF ICE INDUSTRIES
November 17-20, 1953
Hotel Statler, Washington, D. C.
GUY W. JACOBS, Exec. Secretary

ASSOCIATION DIRECTORY

AMERICAN INSTITUTE OF REFRIGERATION
H. T. McDermott, Gen. Secretary, 433 N. Waller, Chicago 44, Ill.

NATIONAL ASSOCIATION OF ICE INDUSTRIES
Guy W. Jacobs, Secy., 1706 L St., N. W., Washington 6, D. C.

NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES
Wm. Dalton, Exec. Vice-Pres. Tower Bldg., Washington 5, D. C.

NATIONAL ASSOCIATION OF PRACTICAL REFRIGERATING ENGINEERS
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CALIFORNIA ASSOCIATION OF ICE INDUSTRIES
Jack L. Dawson, Secretary
461 Market St., San Francisco, Calif.

CANADIAN ASSOCIATION OF ICE INDUSTRIES, INC.
Mrs. Mildred E. Croft, Executive Secretary
378 Eglinton Ave., E. Toronto 12, Canada

DELTA STATES ICE ASSOCIATION
R. N. Milling, Secretary
Ouachita Bank Bldg., Monroe, La.

EASTERN STATES ICE ASSOCIATION
R. H. Wilson, Secretary-treasurer
Delavan Ave. & Spruce St., Philadelphia, Pa.

FLORIDA ICE ASSOCIATION
Muriel Washburn, Secretary
1926 Silver St., Jacksonville, Fla.

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Cincinnati, Ohio

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Crystal Ice Co., Selma, Ala.

ILLINOIS ASSOCIATION OF ICE INDUSTRIES
W. D. Wright, Secretary
Clinton Pure Ice Co., Clinton, Ill.

INDIANA ASSOCIATION OF ICE INDUSTRIES
Robert W. Walton, Secretary
Board of Trade Bldg., Indianapolis, Ind.

KANSAS ASSOCIATION OF ICE INDUSTRIES
Matt Scherer, Secretary
McPherson Ice Company,
McPherson, Kansas

KENTUCKY ICE MANUFACTURERS ASSOCIATION
R. T. King, secretary
217 E. Main St., Louisville 2, Ky.

MICHIGAN ICE INDUSTRIES ASSOCIATION
Edward W. Jackson, Secretary
131 E. Kalamazoo Ave., Kalamazoo, Mich.

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Booth Cold Storage Co., St. Louis, Mo.

MISSOURI VALLEY ICE MANUFACTURERS' ASSN.
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3820 Washington St., St. Louis, Mo.

MOUNTAIN STATES ASS'N OF ICE INDUSTRIES
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Espy Ice Co., 2101-31st St., Denver 5, Colo.

NEBRASKA ASSOCIATION OF ICE INDUSTRIES
Frank Vogelsang, Secretary
W. T. Good Ice Co., Lincoln, Nebr.

NEW ENGLAND ICE ASSOCIATION
Raymond Wilber, Secretary
83 Winter St., Providence, R. I.

NEW JERSEY STATE ASSN., N.A.R.W.
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Harborside Warehouse Co. Inc.
Jersey City, N. J.

NEW YORK STATE ASS'N REF. WAREHOUSES
Garth A. Shoemaker, president
Hygeia Refrigerating Co., Elmira, N. Y.

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Terminal Refrigerating & Warehousing Corp.
Washington, D. C.

NORTH CAROLINA ICE ASSOCIATION
Lewis H. Powell, Secretary
Capital Ice & Coal Co., Raleigh, N. C.

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Diamond Ice & Storage Co.,
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1539 N. E. 37th Ave., Portland, Ore.

OHIO ASSOCIATION OF ICE INDUSTRIES
Elizabeth Shannon, Actipg Secy.-Treas.
The Steubenville Ice Co., Steubenville, O.

OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
Harry T. Hudson, Executive Secretary
525 Cravens Building 7, Oklahoma City, Okla.

PACIFIC STATES COLD STORAGE WAREHOUSEMEN'S ASSOCIATION
Jack L. Dawson, Secretary
461 Market St., San Francisco, Calif.

SOUTH CAROLINA ICE MANUFACTURERS ASS'N
Geo. L. English, Secretary
P. O. Box 603, Columbia, S. C.

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SOUTHERN ICE EXCHANGE
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11½ Forsyth St. N. W., Atlanta, Ga.

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Tampa Cold Storage & Warehouse Corp.
Tampa, Fla.

SOUTHWESTERN CHAPTER, N.A.R.W.
C. P. Metcalf, chairman
Southwestern Ice & Cold Storage Co.,
Austin, Tex.

SOUTHWESTERN ICE MANUFACTURERS ASS'N
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Mercantile Bank Bldg., Dallas, Tex.

TENNESSEE ICE MANUFACTURERS ASSOCIATION
W. E. Harlan, Secretary
Mt. Pleasant Ice Co., Mt. Pleasant, Tenn.

TRI-STATE ASSOCIATION OF ICE INDUSTRIES
L. R. Girton, Secretary
260 Boyce-Greeley Bldg., Sioux Falls, S. D.

VIRGINIA ICE MANUFACTURERS ASSOCIATION
H. H. Snyder, Secretary
Alexandria, Va.

WEST VIRGINIA ASSOCIATION OF ICE INDUSTRIES
E. Dana Smith, Secretary
Diamond Ice & Coal Co., Charleston, W. Va.

WISCONSIN ASSOCIATION OF ICE INDUSTRIES
Paul F. Hoff, Secretary
1300 East Locust St., Milwaukee, Wis.

HOW MANY "DEGREES" IN A BOTTLE OF MILK?

Howe Polar Circle Coil Freezer Installation, Cleveland

Plenty... when you consider *temperatures!* Milk direct from the cow at 101° is soon cooled down to 60° for shipping to the milk plant. It's held in storage tanks at 40°, and then heated to 160° for pasteurization. Immediately cooled down to 40° or lower for bottling, placed in storage rooms at 38°, milk is then delivered at 40°. Exact processing temperatures for dairy products are vital to protect *your* profits. Whatever your product refrigeration problem, consult Howe engineers. 41 years of specialized "job-proved" experience back every recommendation, whether it's for a new plant, or redesigning your present one. Give your operating and maintenance costs a *brake* with Howe guaranteed equipment.

UNIT COOLER

Since 1912, manufacturers of ammonia compressors, condensers, coolers, fin coils, locker freezing units, air conditioning (cooling) equipment.

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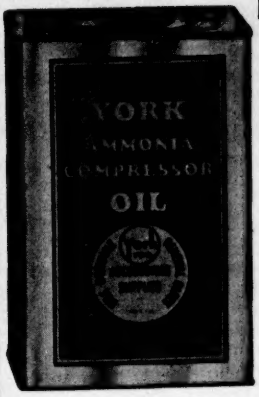
HOWE
ICE MACHINE COMPANY

2829 MONTROSE AVE. • CHICAGO 18, ILL.

Distributors in Principal Cities - Cable Address: HIMCO, Chicago

YORK



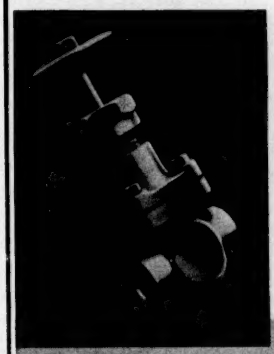
More than 500,000 Compressors and Condensing Units are safeguarded by York super-refined oil.

THE FINEST OIL YOU CAN BUY

Long ago York found that unsuited oil is the prime enemy of refrigeration performance. So York refines its own oils to insure uniformly high quality. The result is protection *plus* for your expensive equipment; *high* lubricity, *high* stability, *low* power requirements and *low* wear!

You pay no more for this super-premium oil. So it costs you less to have longer-lasting protection.

Get York Super-Refined Oil from the nearby York Branch Office, or the Industrial Sales Engineer who calls on you. Or write to York Corp., York, Pa.



TRIPLE-INSPECTED
DOUBLE-TESTED
York Valves and Fittings

You won't get a York Valve that leaks! Each Valve is triple-inspected and double-tested at the factory at 300 lbs. per square inch pressure—*under water*—for overall tightness.

It Always Pays to Use York Accessories and Supplies

Air Filters, Air Fittings, Automatic Controls, Brine Testing Sets, Can Covers, Can Dumps, Can Fillers, Charging Connections, Coils and Piping, Cold Storage Doors, Freon Refrigerants, Gas Masks, Ice Cans, Maintenance Contracts, Motors and Pumps, Oil, Oil Traps, Purge Devices, Receivers, Renewal Parts, Suction Traps, Spot Service, Valves and Fittings

YORK REFRIGERATION AND AIR CONDITIONING

HEADQUARTERS FOR MECHANICAL COOLING SINCE 1885

New Plants and Improvements

Santa Clara, Calif. — Consolidated Cooling Co. of San Francisco, recently announced it will start equipment of a $100,000 vegetable and fruit precooling plant in Santa Clara immediately. According to Angelo Lucido Jr., president of the firm, the plant will occupy 22,000 square feet of working space on a long-term lease basis.

Santa Clara, Calif.—Plans of establishment of a $70,000 frozen food distribution plant in Santa Clara by the Levy-Zentner Co., of San Francisco has been announced, with the plant located on a 70 by 150 foot site on Richard Street. T. H. Feurres, manager of the frozen food division of the company, said the steadily increasing business the firm is deriving from the San Jose area induced its expansion here.

Nampa, Idaho—Contract has been awarded for construction of an addition to the Terminal Ice & Cold Storage Company building, with 500,000 cubic feet of refrigerated storage space.

St. Joseph, Mo.—A cold storage plant is being built at State Hospital No. 2 at a cost of $310,000.

Tulsa, Okla.—The Daugherty Ice Plant, seriously damaged by fire will be rebuilt, the work of reconstruction to be started as soon as possible.

Philadelphia, Pa.—Construction has started on a new $30,000 freezer unit at the Jax Ice & Cold Storage Company plant. The addition is the first of two such units which will more than double the present capacity.

Memphis, Tenn. — The Mid-South Refrigerated Warehouse Co. has begun operations in its new plant. The plant is of single-story design with 1,300,000 cubic feet of all-freezer space and 20 blast freezing tunnels with 1,000,000 pound capacity.

Nashville, Tenn.—Noel & Company, Inc. has added 150,000 cubic feet of convertible space for cooler or freezer products to its facilities by converting a room formerly used for ice storage. In addition it has also converted five coolers to freezers over the past ten months.

Kent, Wash. — Stokely-Van Camp Inc. plans to build a $125,000 frozen food processing plant.

New Incorporations

Dallas, Tex.—Service Ice Company. Incorporators, W. F. Kennemer, W. F. Kennemer, Jr., and H. H. Kennemer; capital stock, $25,000.00.

Marshall, Tex.—Pure Ice Company, Inc. Capital stock, $10,000.00; incorporators, J. B. Hayes, Jr., Locke M. Stuart and J. R. Hayes, Sr.

Weslaco, Tex.—Weslaco Ice Company. Capital stock $25,000.00; incorporators, D. J. Hale, Frank Koester and F. V. Lehman.

Janesville, Wis.—The City Ice & Coal Company has been formed with an authorized capital stock of 1250 shares of common, no par value

Fire and Accident Record

Claremont, Calif.—A fire was averted at the Union Ice Company plant when the operator on duty discovered a small motor burning as a result of mechanical failure. Damage was held to approximately $100.

Watsonville, Calif.—The Baker Food Products building which was being converted from a frozen food to a commercial freezing plant was damaged by a fire resulting in total estimated loss of $350,000 to building and contents.

Miami, Fla.—A fire of undetermined origin caused an estimated $10,000 damage to trucks and cars stored in a shed at the Royal Palm Ice Company garage.

Logansport, Ind.—The plant of the Artificial Ice & Fuel Company here was damaged by fire with a total loss of about $20,000. The blaze was believed to have started in the boiler room and spread quickly throughout the plant and into the Logan Beverage plant adjoining. All of the refrigeration equipment was destroyed.

Belen, La.—An explosion at the Railways Ice plant here killed the plant engineer, Garfield Hobbs, and injured two others. An ammonia pipe explosion released ammonia fumes and hampered rescue work by firemen.

Taylorsville, Miss. — The Smith County Ice Plant, owned and operated by J. W. Walker was destroyed by fire with loss estimated at $17,000.

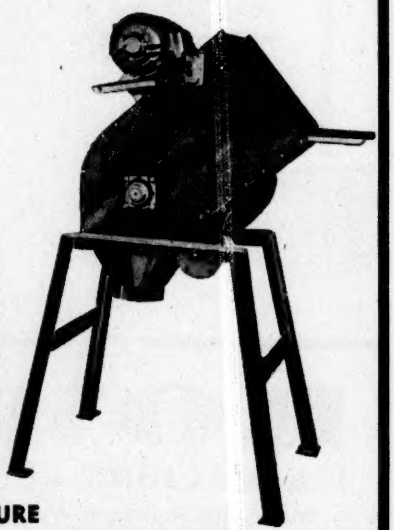
TWO NEW ALL-STEEL ICE CRUSHERS by *BATEMAN*

Regal MODEL 25

The New REGAL Model 25 has all steel frame legs, grate handle and grate. Self-aligning ball bearings. Legs high enough for 25-lb. paper bag to be filled. Galvanized for the prevention of rust. ¾ HP. motor. Direct drive, no gears. Shelf for placing ice on before entering hopper. Slanting hopper for easy loading. Four grate adjustments by turning the handle on side of crusher. Makes a very good fine ice on grate closed. Will take long 50-lb. blocks in hopper. Two belts for sure pulling power. Belts and motor pulley furnished when crusher is ordered without motor. Delivery can be made on receipt of order. Guard covers the flywheel and motor pulley.

Price $149.00, less motor. Motor at prevailing price.

Monarch MODEL 50



The Bateman all steel MONARCH Model 50 Ice Crusher is galvanized for the prevention of rust. Slanting hopper for easy loading, with shelf for placing ice on before entering crusher. Hopper opening—12½"x15". Uses 1 HP. motor with V-belt drive. All moving parts move on either ball or roller bearings. Gears are of alloy steel hardened for long life and trouble free. Steel shell, legs, grates, grate handle and alloy steel teeth. Belts and pulley furnished when crusher is ordered without motor. Side plates and bottom of hopper 3/16" steel.

Price $235.00, less motor. Motor at prevailing price.

WRITE FOR DESCRIPTIVE LITERATURE

Bateman ICE PROCESSING EQUIPMENT MINERAL WELLS TEXAS

Syracuse, N. Y.—Smoke from a fire at the Central City Cold Storage plant compelled firemen to don masks. The building was not being used and workmen were dismantling some tanks preparatory to making renovations.

Lincoln, Nebr. — Fire caused an estimated $6,000 damage to the W. T. Good Ice Company plant. The blaze apparently started in a wooden covering over a brine tank and spread to sawdust insulation in a low attic of the roof.

Tulsa, Okla.—The Daugherty Ice Company plant was seriously damaged by fire. Loss was estimated at $20,000.

Sales and Reorganizations

Manteca, Calif.—Ted Plummer has bought the Williamson Refrigerating plant and plans to do extensive remodeling.

Chicago, Ill.—The National Ice & Fuel Corporation, I. G. Grawoig, president, announces that it has acquired the ice business, good will and certain assets including the ice plant, real estate, machinery and equipment of the Oetting Brothers Ice Company located at 3001-1011 West 26th Street, which will be operated as a division of the National Ice & Fuel Corporation.

Mt. Vernon, Ind.—DeRoo Weber, Mt. Vernon attorney has purchased the plant and real estate of Consumers Ice & Cold Storage Company which will be converted into a lumber and building materials plant.

Jeanerrete, La.—The Coca Cola Bottling Co. at Jeanerette and ice plants located at Jeanerette and Iberia have been purchased by The Central Louisiana Electric Co. with headquarters at Alexandria, La.

Buffalo, N. Y.—The former 15,000 square foot Eagle Ice Company plant at 2 North Central Ave., has been sold to Inland Warehouse, Inc. which will use it for the distribution of food products after alterations are completed.

Schenectady, N. Y.—Empire Markets has acquired the L. G. Haviland Cold Storage plant at Haviland and will use it in expanding its Flash Frozen poultry meat and fish products.

Niagara Falls, N. Y.—The Ice plant and equipment of Cataract Ice Company, of which William J. Williamson is president, has been leased for ten years effective February, 1953, to Walter Ostrander, The Rose Ice Company, Tonawanda, N. Y. Mr. Ostrander will continue the business at the former Cataract Ice Company address,, 821 Cedar Avenue, Niagara Falls, combining with it his Tonawanda tonnage in one operation.

Icy Items

New Orleans, La.—The Republic Ice Manufacturing Company has filed notice of dissolution of its charter of incorporation with the office of the secretary of state.

DEATHS

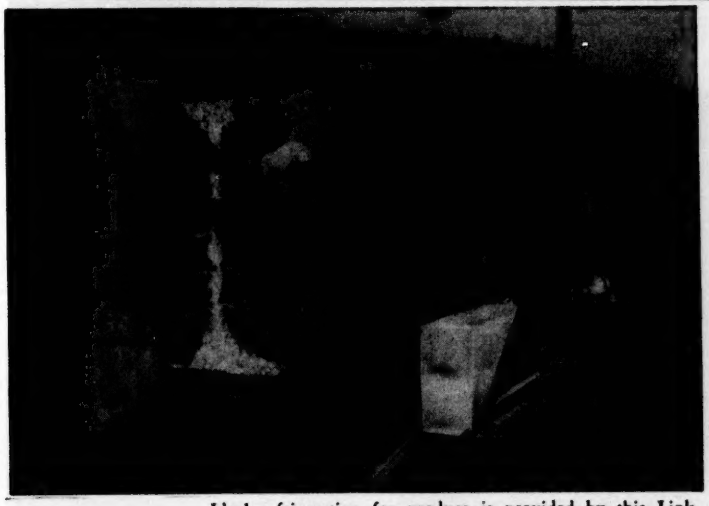
THOMAS WILLIAM HODGE, Ashland, Kentucky, president and general manager of the Federal Ice Company and the Ashland Home Ice Company, both of Ashland, and the Federal Ice Company, Conover, West Virginia, died at his home in Ashland, April 7. He was formerly manager of the Louisa Light and Power Company of Louisa, moving to Ashland in 1930.

W. H. HAMILTON, 58 a maintenance engineer of the main Atlantic Ice plant in Atlanta was found dead on the job by fellow employees May 4. He apparently had suffered a heart attack. Police and medical attendants said death was "of natural causes."

BERT J. HOWARD, engineer for the City Ice Company, Miami, Florida, died following a fall from a 10-foot ladder. Mr. Howard moved to Miami from Orange, Texas, ten years ago. He is survived by his widow.

DREW N. WINNIFORD, a native of Lancaster, Texas, who owned and operated an ice business there for 20 years, died in Denver, Colorado, April 23.

Snow-icing opens new markets for you



Ideal refrigeration for produce is provided by this Link-Belt Ice Crusher-Slinger. For many perishable products, you'll find this low-cost machine a real business-builder.

WRITE FOR BOOK 2382 for all the facts

LINK-BELT COMPANY: Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

With a LINK-BELT Ice Crusher-Slinger you can give shippers the improved refrigeration they're demanding today

THIS modern method of icing railway cars and trucks will bring you new business.

Perishable items — produce, seafood, meat, bottled milk — reach market in better condition when top-iced with a Link-Belt Ice Crusher-Slinger.

There's a model for your exact needs. From 15 to 60 tons per hour capacity, stationary or portable, electric or gasoline powered. Find out about this money-maker today.

LINK-BELT

ICE CRUSHER-SLINGERS

12,301

What's New

MACHINERY
APPLIANCES • PROCESSES

Asphaltic Emulsion Insulation Binder

LAYKOLD is a heavy-bodied asphaltic emulsion, made from high-ductility, plasticized base - asphalts, and is applied cold, eliminating the cost of heating equipment. It is compounded without the use of fire-hazardous petroleum solvents, water-absorbent clays, or any other type of fillers which could cause re-emulsification. Before setting, this odorless material is buttery in consistency, suitable for easy spray or brush application without sagging during the setting period.

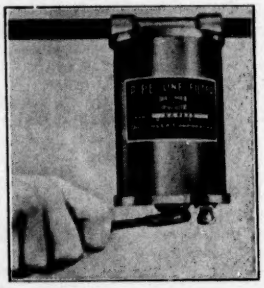
Laykold insulation adhesive is used for vapor barriers with various kinds of asphalted papers, fabric, felt, glass, fiber or metal foil; for all types of formed or block insulation placed in the conventional manner with washer type nails, wood skewers, or stud supports; for holding flat roof-deck insulation; for insulating surrounding air-conditioning ducts that are properly banded; as a seal for perimeter insulation around concrete floor slabs; and in a variety of other applications where a viscous, tacky asphalt film is needed.

A direct replacement for heated binders, Laykold insulatton adhesive was used exclusively in the construction of the U.S. Army Quartermaster Corps Cold Storage warehouse in Alameda, California, largest cold storage plant in the world under one roof.

Added information may be obtained from American Bituminus & Asphalt, 200 Bush St., San Francisco.

New Line Filters

FOUR new small pipe line filter models, designed for installations requiring only 40 psi maximum pressure for compressed air or gas, have been announced by the Dollinger Corp., Rochester, N. Y. The new filters feature one-bold accessibility for quick inspection and cleaning without removing filters from line. They



New Dollinger Pipe Line Filter

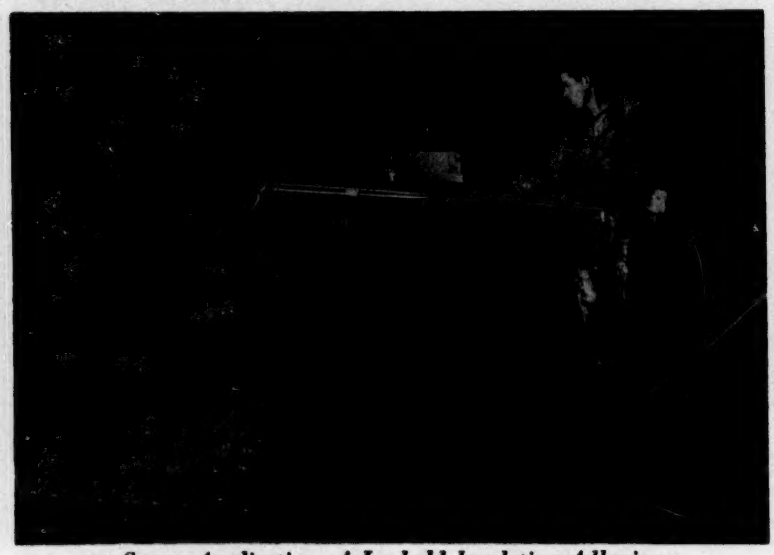
are manufactured in two sizes and each size can use either absorption pad media or the original radial fin inserts. Smaller size filter has a diamter of 3½ inches and a length of 6½ inches. Larger size is 3½ inches in diameter with a length of 10 inches and offers more filtration surface. The AA series with absorption pad media remove oil and vapor from lines. The CH series with radial fin inserts rid lines of dirt and pipe scale.

New CO_2 Spray Gun

A PORTABLE sprayer especially designed for industrial uses where large compressor type spraying is unnecessary has been introduced by the Sullivan Becker Company, Kenosha, Wisconsin. This device sprays paints, oils, varnishes, wa-

New Portable Sprayer

ter proofing, fire proofing, etc. The CO_2 cartridge sprays up to one 21 oz. containerful at high pressure. It has brass and stainless inserts, heavy-gauge steel container, comfortable knurled handle grip and cast aluminum head.



Spray Application of Laykold Insulation Adhesive

Non Combustible Solvents

A GROUP of non-combustible safety solvent products is announced by John B. Moore Corporation, Nutley, N. J. These comprise Cineclene M-5, Oxylene M-6, and Furfasol M-17. Intended to replace carbon tetrachloride in specialized fields of cleaning, these products are said to be of interest to safety engineers and operating men because of comparatively low toxicity and high product efficiency.

Cineclene, M-5 is designed to clean metals prior to brazing or in locations where fast drying and good degreasing properties must be done without fire hazards. Oxylene, M-6 is prepared for cleaning of oxygen systems and equipment. It dries faster than carbon tetrachloride and its calculated maximum allowable concentration is said to be 500 parts per million plus. Furfasol, M-17 was formulated to replace acetone in cleaning latex and resin adhesive products from process equipment.

New
DRY TAMP
PERMA Mix Floor Patch

Permamix-C for patching in temperatures from 5° above to 30° below zero.

DRY TAMP MEANS SPEED • No sticky mass to dig out of the drum or to handle • Permamix dry pours • sets instantly • feather edges perfectly • no production delays • non-skid surface.

ALL TEMPERATURE • Won't freeze • can be stored or used in *any* temperature • will store indefinitely • a stock room item • will not "set" in drum whether open or covered. Mistakes just can't happen. Tamp in place and traffic rolls.

CUTS MAINTENANCE COSTS on concrete, brick, tile or asphalt floors • no special equipment or skill needed • a one man job • comes in durable 50 lb. net wt. fibre drums • solve your floor patching problems for good.

Write for Details Now!

PERMAMIX CORPORATION

220 N. LA SALLE STREET CHICAGO 1, ILLINOIS

FAST SERVICE

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- PAPER BAGS
- ICE CRUSHERS
- ICE PICKS
- PICNIC CHESTS
- CANVAS BAGS
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- TONGS
- SIGNS
- TOOLS

WRITE FOR CATALOGUE

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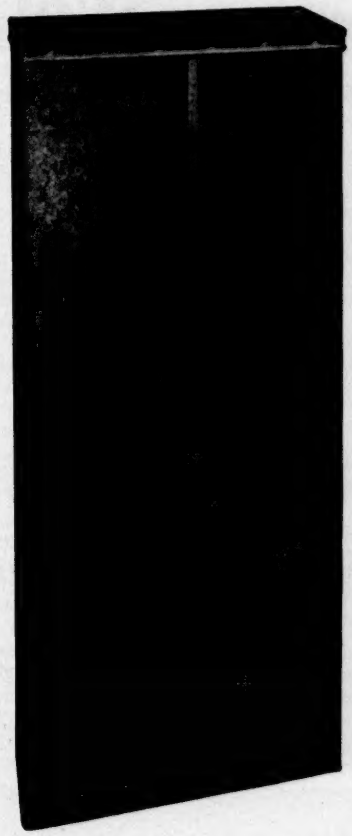
LaPORTE, INDIANA



Welded Cans
Integral Tube Cans
Arctic Pownall Cans
Can Baskets
Condenser Trough

• • • • • • • • • • •

Industrial Trucks and Trailers

THE OHIO GALVANIZING & MFG. CO.
NILES OHIO

MANUFACTURERS' NEWS

Link-Belt Announces Heavy Duty Ice Crusher Slinger

A NEW heavy duty ice crusher slinger for top or body icing of perishable produce in refrigerator cars and long-haul trucks is announced by Link Belt Company, Chicago, Ill. This machine, known as the Series 500, is available in stationary and portable types, equipped with either a gasoline engine or electric motor. It has a normal handling capacity of five 300-pound cakes of ice per minute or 45 tons per hour.

The Series 500, like other Link-Belt ice crusher slingers of various capacities, crushes block or chunk ice and directs the crushed snow-ice through a flexible hose over and between tiers of containers, completely blanketing them for protection. Spoilage is reduced to a minimum, and flavor, freshness and moisture content are preserved.

For leafy vegetables, as an example, the temperatures produced by top icing are close to ideal, according to the U. S. Department of Agriculture, and the moisture produced by the slowly melting ice prevents wilting and drying out.

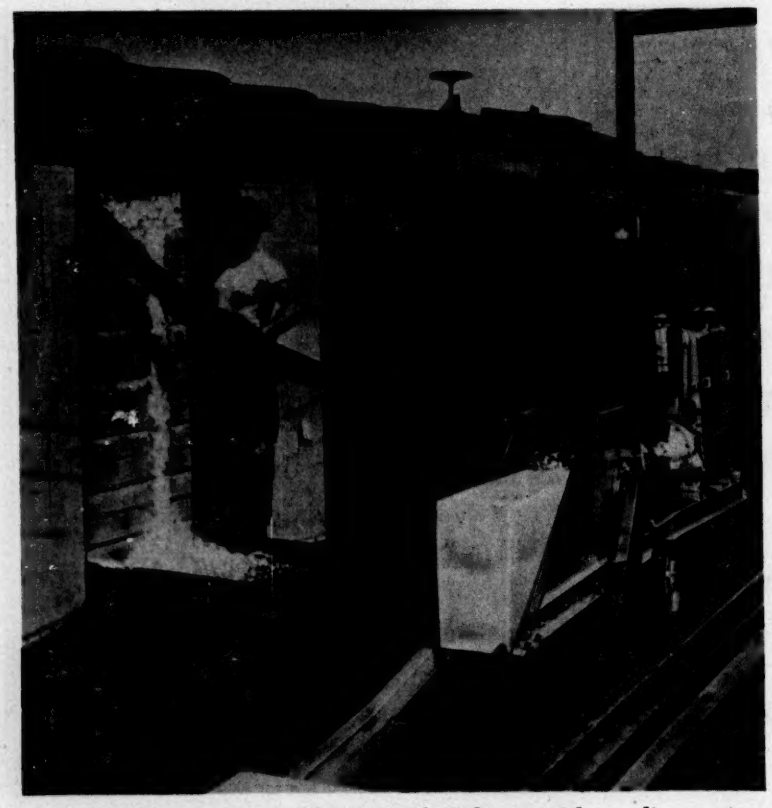
Many types of fruit can be shipped in a more palatable, tree-ripened condition by means of top icing. Finely crushed ice preserves poultry and gives it sales appeal. Seafood and dairy products are also preserved effectively by this means.

Link-Belt Series 500 ice crusher slingers are equipped with a loading ramp and feeder chain conveyor for carrying cakes of ice from the dock to the crusher. The loading ramp hinges out of the way when not in use.

The slinger spout is on a swivel head which permits crushed ice to be delivered to either side of the machine without changing its position.

The portable models have three rubber tired wheels, including a swivel-type front wheel. All wheels are mounted on roller bearings. A convenient handle is provided for moving the machine.

Detailed information about the Series 500 ice crusher slinger is provided in a new Link-Belt Folder, Book No. 2443, a copy of which will be sent to interested readers on request.



Link Belt Series 500 portable ice crusher slinger with gasoline engine.

Pittsburgh Corning Names Yost Construction Engineer

THE Pittsburgh Corning Corporation has appointed Francis A. Yost construction engineer. Mr. Yost will act as a construction consultant, with emphasis on cold storage work. This is a special service offered by the Pittsburgh Corning Corporation to applicators who are using Foamglas insulation.

Francis A. Yost

Mr. Yost is a member of the Engineering Society of Western Pennsylvania, the Professional Engineering Fraternity, the American Institute of Electrical Engineers, and was a former president of the Plant Engineering Association of Pittsburgh. A native Pittsburgher, who has had about 20 years of general engineering background, Mr. Yost was formerly plant engineer for the Fried and Reineman Packing Company. He will be located in the Pittsburgh Corning general office at One Gateway Center, Pittsburgh 22, Pennsylvania.

Kerotest Plant Sold

THE Miller Printing Machinery Co. of Pittsburgh has purchased the Kerotest Manufacturing Company of the same city. All Kerotest preferred and common stock has been acquired by the Miller Company. The Miller Company has been in the graphic arts field since 1903.

Although there was capital impairment and inadequate financing the Kerotest Company was not in fact insolvent in the bankruptcy sense. However, they had filed a petition in Federal Court asking to reorganize. The trustee and other interested parties approached the Miller Company because they had gone through a similar procedure in 1936 and its management had regained its strong financial position and eminency in the printing machinery field.

R. B. Tullis, President of Miller, stated that the Kerotest Company will be operated as a separate company with a few executives of the Miller Company acting in an advisory capacity. No drastic changes are considered as far as the present Kerotest organization is concerned and former employees will be called.

Henry Valve Appointment

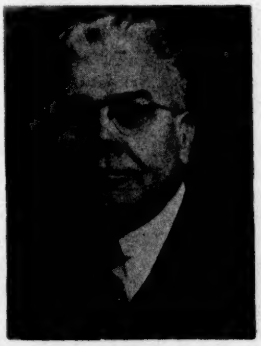
THE Henry Valve Co. of Melrose Park, Ill. announce the appointment of Sterling Alexander as assistant sales manager for the company. Mr. Alexander, who has been with

Sterling Alexander

the company for 11 years, will act in a supervisory capacity in connection with all sales personnel and will also have charge of export sales.

Mart New President Cooling Tower Institute

AT the recent annual meeting of the Cooling Tower Institute, Leon T. Mart, president of The Marley Company of Kansas City, Mo., was elected president of the Institute. Other officers elected for the 1953 terms were Neal B. LauBach, Hudson Engineering Corp., Houston, vice-president; Paul R. Hoffman, Lilie-Hoffmann Cooling Towers, St. Louis, secretary; Clayton E. Pickup, The Fluor Corporation, Los Angeles, treasurer. Executive offices of the Institute at Palo Alto, California, continue under the direction of Raymond C. Kelly, executive manager.



Leon T. Mart

Member companies, all major manufacturers of industrial water conservation equipment, are Foster Wheeler Corp., New York City, J. F. Pritchard & Co., Kansas City, Mo., United Cooling Tower Co., Kansas City, Mo., Water Cooling Equipment Co., St. Louis and C. H. Wheeler Mfg. Co., Philadelphia in addition to firms represented by new officers.

Expanded programs of technical field studies were approved by the Board of Directors at the San Francisco meeting. Cooperating with the California Redwood Association, the U. S. Forest Products Laboratory and the Institute of Paper Chemistry, the Institute will complete some of its field studies for the improvement of water conservation equipment.

"This new research work is pioneering in a branch of technology which has been inadequately treated in the engineering field in years past," Mr. Kelly said. Twenty selected cooling tower users are contributing their plant facilities for the Institute studies.

Acme Industries Reports First Quarter Sales Rise

THE results of the new surge of consumer interest in air conditioning is being felt by Acme Industries of Jackson, Mich. Information released by K. A. Weatherwax, Acme President, indicated that 1953 would be a banner year. Sales for the quarter ending March 31 were fifty-two per cent higher than those of the same period in 1952. As of this date, April sales have more than doubled sales figures for the same month a year ago. Mr. Weatherwax stated that the company's backlog of orders is at the highest in Acme's history.

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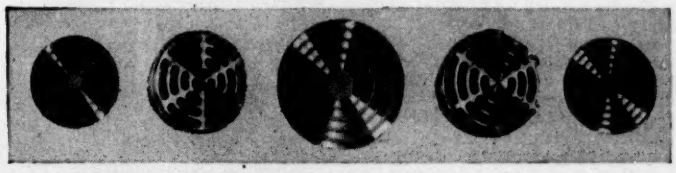
compressor operators

do you want peak performance

- Quiet, vibration-free operation
- 20 to 60% more valve area
- Less power consumption
- Low pressure loss
- Normal discharge temperature
- Lower operating costs

if you do . . . *investigate the established advantages of VOSS VALVES for your machines.*

VOSS VALVES are made to specifications, machined from solid stock (not cast)—PLATES are machined and ground (not press formed) for precise high-tolerance fit; VALVES and PLATES are of heat-treated alloy and stainless steel; the PLATES are dimensionally stable, ductile, resist fracture, high temperatures and corrosion; withstand fatigue; won't chip, crack or score cylinder walls.



To increase the efficiency of your compressor, send us the name, bore, stroke and speed of your machine. Our detailed proposal will be sent without obligation.

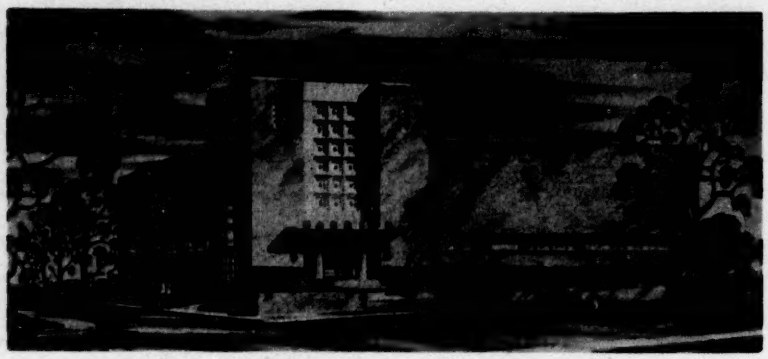
VOSS VALVES REG. U.S. PAT. OFF.

J. H. H. VOSS CO. INCORPORATED

783 East 144th Street, New York 54, N. Y.

Carrier Will Occupy New Modern Office Building

A THOROUGHLY modern office building for the exclusive use of Carrier Corporation will be opened in Atlanta, Ga. about October 1, it was announced by William Bynum, executive vice-president. The new building will be located at 2005 Peachtree Road, about four miles northeast of downtown Atlanta. Groundbreaking has already taken place.



New Modern Office Building of Carrier Corp., Atlanta, Ga.

The new two-story building will be constructed of reinforced concrete with a Roman brick and limestone exterior. Provision will be made for a third floor, for future expansion. It will be essentially windowless, completely air conditioned and provided with the most modern designed lighting and accoustical treatment.

Situated on a 103 x 320 ft. corner plot, the building will contain approximately 22,000 square feet of floor space. As presently planned, it will house about 90 people, including sales, engineering, construction, and service personnel, to serve Carrier's customers in the 10 Southeast states.

New Vending Equipment

IN KEEPING with the modern trend in the ice industry the following companies, during the past month, have installed S & S ice vending refrigerated stations:

Apex Ice Co., Apex, N. C.
Middle Florida Ice Co., Tallahassee, Fla.
Owens Supermarket No. 2, San Bernidino, Calif.
Dairy Queen, Richmond, Ind.
Al Macks, Philadelphia, Pa.
Shawnee Ice Co., Shawnee, Okla.
Storeys Ice Co., Vancouver, B. C.
J. M. Fox Co., West Chester, Pa.
Ice Service, Inc., Baton Rouge, La.
Artic Ice Co., Brantford, Canada.
Anderson Ice Co., Anderson, Ind.
Hoffman & Sons, Albany, N. Y.
J. Di Donato Co., Philadelphia, Pa.
American Service Co., Columbus, Ga.
Santa Fe Ice Co., Santa Fe, N. M.
Southwest Ice & Dairy, Enid, Okla.
Southwest Ice & Dairy, Altus, Okla.
Detroit City Ice & Fuel Co., Detroit, Mich.
Carender Co., Stockton, Mo.
American Service Co., Chattanooga, Tenn.
Holt & McAdoo, Tatum, N. M.
Modern Enterprises, Vincennes, Ind.
Peoples Ice Co., Lubbock, Texas.
City Products Corp., Fremont, Ohio.
Kalanty & Yentzer, Somerton, Pa.
George Ajamy Co., Richmond, Va.
Richmond Ice Co., Richmond, Va.
Clifton Wilder, Indianapolis, Ind.
A. J. Rainwater Co., Florence, S. C.
California Consumers Co., Los Angeles, Calif.
Richmond Cold Storage Co., Richmond, Va.
Vista Fruit & Beverage Co., Boise, Idaho.

New Styrofoam Distributor

THE Dow Chemical Company, Midland, Michigan, announces the appointment of The Sherman W. Putnam Organization, Inc., 75 East Wacker Drive, Chicago, 1, Ill., as a distributor for Styrofoam.

Worthington to Build Plant in Alabama

PLANS for the construction of a new plant in Decatur, Alabama, for the manufacture of air-conditioning equipment have been announced by Worthington Corporation, following approval at a meeting of the Board of Directors on May 20. Negotiations for the acquisition of the plant site, a 100-acre tract of land bordering the Tennessee River, have been in progress for a number of weeks.

It is estimated that the initial plant and equipment will represent an investment of approximately $3,500,000 and will employ up to 400 persons. Construction will begin in June and at present Worthington Corporation contemplates occupancy by November. A building approximately 240 feet wide and 600 feet long will be erected for the manufacture of the company's line of self-contained air-conditioning units in commercial sizes of 3, 5, 10 and 15-ton units, as well as related products. The building, designed without windows, will contain more than 160,000 square feet of floor space and will be completely air conditioned. An office building containing 10,000 square feet of floor space will also be provided.

Recommendations to build the plant at the Decatur site were made after conducting an extensive survey of the Southwest for a suitable manufacturing location. During the negotiations representatives of the company visited Decatur to confer with city and county officials.

Kramer Trenton Conducts Four-Day Sales Conference

SALES representatives from territories throughout the United States, except for Pacific coast representatives, attended a 4-day sales conference at the Kramer Trenton Company plant, Trenton, N. J. An intensive series of meetings were directed by S. Charles Segal, Kramer's general sales manager. Nathan and Israel Kramer, company officials, addressed several of the sessions. Every Kramer department was represented at the conference-style meetings and the factory sessions included a complete study tour of the entire plant facility and the extensive Kramer laboratory.

Receiving major attention at the sessions were advancements in engineering and design of new and improved Kramer equipment. Production plans for the balance of 1953 were also discussed as were advertising programs and literature being prepared to cover all new Kramer advancements.

Group of sales representatives attending closing banquet meeting of four-day confernce of Kramer-Trenton sales conference at Trenton, N. J.

LILLY ICIZER
Model 23CE12 with "V" Feeder

This Model ICIZER will size 25-35 tons per hour. Lilly "V" Feeder shown feeds full blocks into breaker.
Other models for large and small plants.

more profits this summer
with a LILLY ICIZER

Sized ice is your biggest money maker . . . and a Lilly Ice Sizing unit is your best bet for easier, more economical, trouble-free production. Lilly Icizers offer superior advantages throughout, with—

- Precision Adjustable Breaker
- Bucket type elevator—no scraping or grinding of ice
- Rubber wheel sanitary screen drive
- Positive Feed spiral screens
- Bag height bins—faster filling

—and there's a standard model Lilly Ice Sizer for every size plant.

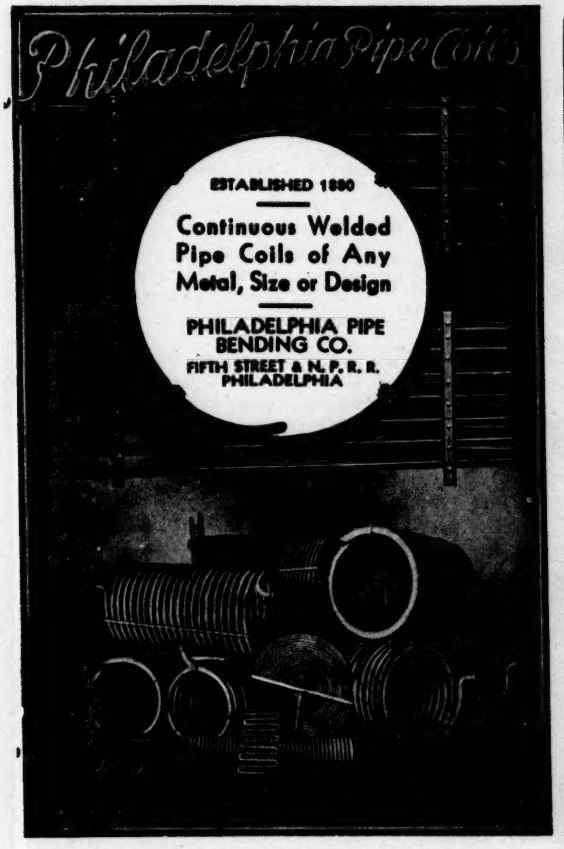
Boost your profits this summer. Write today for Lilly Catalog No. 303 and get full details on Lilly Sizing and crushing equipment. *No obligation.*

Package Your Ice in
LILLY PAPER BAGS
Write for new lower prices

THE LILLY COMPANY
366 Union Avenue, Memphis 3, Tenn.

SUPPLIES — EQUIPMENT
- Bags—Tongs
- Ice Sizers
- Tank Supplies
- Crushers

A complete line of supplies and equipment for the ice industry.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ESTABLISHED 1890
Continuous Welded Pipe Coils of Any Metal, Size or Design
PHILADELPHIA PIPE BENDING CO.
FIFTH STREET & N. P. R. R.
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Reliable Performance

Low cost centrifugal pumps with mechanical seals, balanced bronze impellers, ball bearings.
1/4 to 1 1/2 H.P. Motors.

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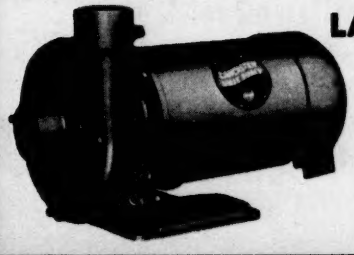

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UNIT
PUMPS
TYPE M

FOR CIRCULATION JOBS

ALSO AVAILABLE
LANCASTER UNIT PUMPS
from 2-50 H.P. and heads to 300'
Capacities to 1000 G.P.M.
Write for Catalog

LANCASTER PUMP AND MANUFACTURING CO., Inc.
LANCASTER PENNSYLVANIA

CATALOGS AND BULLETINS

Trane Announces Revised Air Conditioning Manual

A NEWLY revised edition of the Trane Air Conditioning Manual has been published by The Trane Company, La Crosse, Wisconsin, manufacturers of heating, air conditioning and heat exchange equipment.

A new fan chapter has been added to the book to cover fan application and selection, basic fan laws and duct design data and nomenclature. This chapter adds to the manual complete information on design of air handling systems for air conditioning.

The present 380 page edition marks the 16th printing and second major revision since 1938. Since that time the manual has, according to the publisher, not only been popular with engineers and contractors, but has also been used as a standard text and source reference on air conditioning by colleges and other institutions of learning.

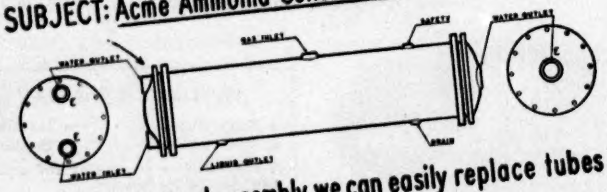
Car Spotters-Pullers

A NEW book on electric car spotters and drum-type car pullers has been issued by the Link Belt Company, Chicago, Ill. This book describes a complete line of equipment for moving railroad cars and other heavy loads, including both vertical capstan and horizontal drum designs. Designed originally for moving railroad cars, these car spotters and pullers have been adapted to other industrial tasks involving horizontal haulage such as dragging loaded skids, etc. Engineering data such as calculating rope pulls, etc. is included. Copies are available from the Link Belt Company.

Pages from an ENGINEER'S NOTEBOOK

MEMO: Purchasing Dept.

SUBJECT: Acme Ammonia Condensers



1. With the lock nut assembly we can easily replace tubes ourselves, when necessary.
2. Refrigerant connections are of forged steel—insures longer wear.
3. Shells are of seamless steel pipe. Wall thickness varies with the diameter. Should last a lifetime.
4. All condensers are designed constructed and tested to meet A.S.M.E. requirements.
5. Large variety of models and head combinations make possible the exact selection for a particular need.

RECOMMEND WE SPECIFY ACME INC.

MEN who know always specify Acme

In the air conditioning and refrigeration business the men who are really in a position to investigate a product and its capabilities ultimately choose Acme units to fill their cooling needs. Acme has been in the business since 1919 and in that time has developed a complete line of top quality products. Write a letter today for a custom-made product to fill your needs.

Address Dept. IR

ACME INDUSTRIES, INC., Jackson, Mich.

AIR CONDITIONING and REFRIGERATION DIVISION

Continuously serving the air conditioning and refrigeration industry since 1919

New Desiccant and Drier Fitting

A SPECIAL issue of Ansul News Notes deals with the development of a new desiccant and a new drier fitting for use in refrigeration systems. Andrite is the name that this firm has applied to the new desiccant and T-flow is the term applied to the fitting.

John Bopp, chief chemist for Ansul Refrigeration Research, describes the new desiccant and its features. Richard A. Line, assistant chief engineer for Ansul Research and Development, writes on T-flow principles engineered by Ansul. He describes how this T-flow fitting was styled by the world renowned Raymond Loewy & Associates. This 8-page bulletin in color illustrations and print may be obtained by writing ICE AND REFRIGERATION or Ansul Chemical Company at Marinette, Wisconsin.

Electronik Controllers

A CATALOG bearing the title "Electronik Controllers" comprising 56 pages describes all types of these control instruments which are used to measure and control a multiplicity of process variables. Included are detailed specifications and control actions, descriptions and ratings for both electric and pneumatic type controllers. It also gives engineering data on the Electr-O-Line and Electr-O-Pulse electric control relays. Copies are available from the Minneapolis-Honeywell Regulator Company, Philadelphia.

Welding Design Manual

A NEW 4th Edition Welding Design Manual has been issued by the Eutectic Welding Alloys Corporation, New York, containing 62 new photographs, 132 new drawings, 72 pages of data covering basic and advanced welding technique and design used in fabricating and assembly. It is well illustrated with application drawings; weld diagrams; tables of melting temperatures, strengths, corrosion factors; charts and an alloy recommendation. The new manual has been published in a convenient digest size.

THE BUYERS DIRECTORY

INDEX TO ADVERTISMENTS OF THESE FIRMS—PAGE 68

ABSORBERS
Vogt Machine Co., Henry, Louisville, Ky.

AIR CONDITIONING EQUIPMENT
Carrier Corp., Syracuse, N. Y.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Niagara Blower Co., New York, N. Y.

AMMONIA COMPRESSOR VALVES
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.

AMMONIA COMPRESSORS
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Enterprise Equipment Corp., Yonkers, N. Y.
Frick Co., Waynesboro, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

AMMONIA CONTROL DEVICES
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.

AMMONIA FLOAT VALVES
Acme Industries, Inc., Jackson, Mich.
Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesboro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

AMMONIA MANUFACTURERS
Armour Ammonia Div., Armour & Co., Chicago, Ill.
Bower Chemical Mfg. Co., Henry Philadelphia, Pa.
du Pont de Nemours & Co., Inc., E. I., Polychemicals Dept., Wilmington, Del.
Nitrogen Div., Allied Chemical & Dye Corp., New York, N. Y.

AMMONIA MASKS
Acme Protection Equipment Co., Chicago, Ill.

AMMONIA PURIFIERS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
International Salt Co., Inc., Scranton, Pa.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

AMMONIA RECEIVERS
Acme Industries, Inc., Jackson, Mich.
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Enterprise Equipment Corp., Yonkers, N. Y.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

AMMONIA VALVES & FITTINGS
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Frick Co., Waynesboro, Pa.
Shank Co., Cyrus, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

ARCHITECTS AND ENGINEERS
Greene, Van R. H., New York, N. Y.
Ophuls & Associates, Fred, New York, N. Y.

ASPHALT PRODUCTS
American Bitumuls & Asphalt Co. San Francisco, Calif.

AUTOMATIC CONTROL DEVICES
Alco Valve Co., St. Louis, Mo.
Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesboro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Rex Engineering & Sales Co., Oklahoma City, Okla.
York Corp., York, Pa.

BAGS, ICE
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Corp., New York, N. Y.

BAGS, WATERPROOF PAPER
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Co., New York, N. Y.

BEER COOLERS
Frick Co., Waynesboro, Pa.
Martocello & Co., Jos. A., Philadelphia, Penna.
Vogt Machine Co., Henry, Louisville, Ky.

BLOWERS
Frick Co., Waynesboro, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

BOILERS
Vogt Machine Co., Henry, Louisville, Ky.

BOILER TUBES
Byers Co., A. M., Pittsburgh, Pa.

BOOKS—TECHNICAL
Nickerson & Collins Co., Chicago, Ill.

BRINE CIRCULATORS
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Roots-Connersville Blower Corp., Connersville, Ky.
York Corp., York, Pa.

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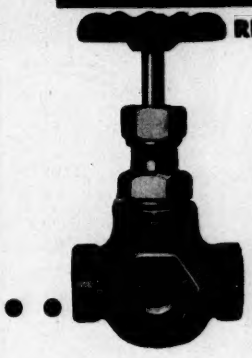
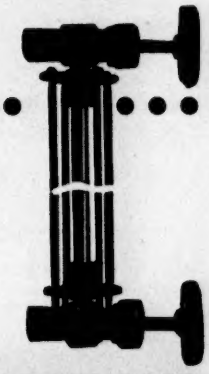
Frick Co., Waynesboro, Pa.
Reynolds Mfg. Co., Springfield, Mo
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

shank AMMONIA VALVES AND REFRIGERATION PRODUCTS



SEMI-STEEL SHUT-OFF VALVE

Highest grade non-porous metal—full size ports—clean cut threads. Back seated stem — Shank design base—perfect alignment. Long life packing ring.



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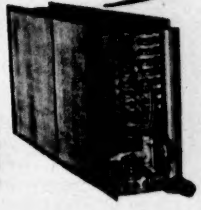

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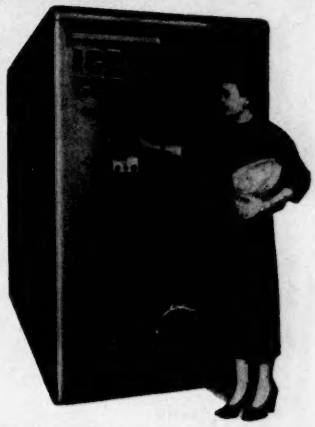

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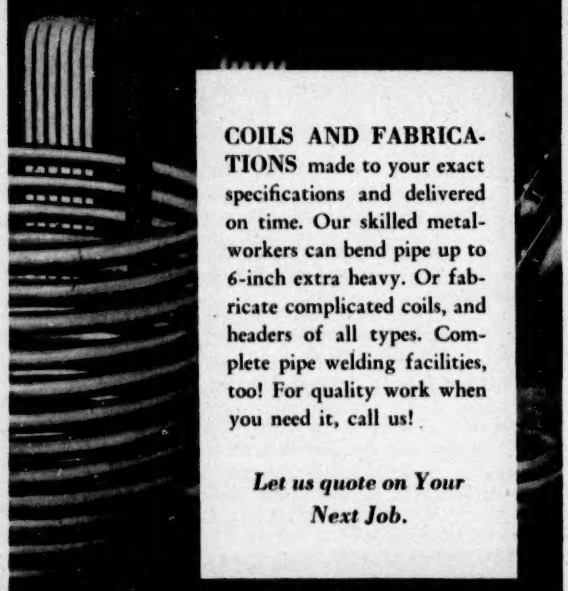

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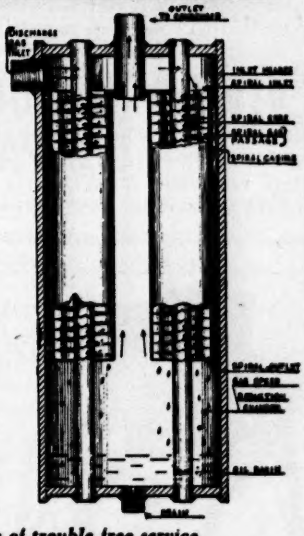

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ENGINEERS
COMPLETE PLANT DESIGNS INCLUDING
BUILDING AND EQUIPMENT
11 PARK PLACE NEW YORK 7, N.Y.

Classified Advertising

All classified advertisements are payable in advance. Except for Positions and Help Wanted classifications, this section is reserved exclusively for USED equipment.

RATES: $4.00 for 50 words or less; 70c for each additional 10 words or fraction thereof; $1 per line for bold face headings; $10.50 per inch for line lettings.

POSITIONS AND HELP WANTED

WANTED—an honest man to take charge of platform and storage room. Plant location in West Central Florida. Address Box JU-3, c/o Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

ADDED PROFITS—Dealerships now open for Metl-Bottom Ice Bags and Icessories. Lucrative territories available to energetic dealers. Contact us NOW for details. The Wagner Awning & Manufacturing Co., 2658 Scranton Road, Cleveland 1, Ohio. Phone TOwer 1-5400.

PLANTS—for sale

FOR SALE—Retiring from business after 45 years of continuous operation. We offer a coal yard and equipment also cold storage, ice and frozen food locker business. Located on Chicago & Northwestern Ry., and Chicago Milwaukee & St. Paul Ry., with 1000 feet of trackage. Rocho Bros. Inc., Boone, Iowa.

USED EQUIPMENT—wanted & for sale

FOR SALE—Perfection Regular ice scoring machine for scoring 11½x22½x45" ice. Recently overhauled and in excellent condition. Price $475.00. Address Public Ice Company, Box 85, Wichita Falls, Texas.

FOR SALE—Hoffman blower; Meir crane mover; 2 can Euclid hoist; one 40 and one 60 h.p. motors, for 2200 volt, with 60 KVA condensers and magnetic starters; 2 agitators. White Frost Ice Co., Inc. Phone 7702, Anderson, Indiana.

FOR SALE—648 can Frick tank with herringbone coils, 50" ice cans nearly new, 6 can three motor crane—9x9 four year old Frick compressor—6x6 Frick compressor with 20 h.p. motor and complete 330 can Frick tank with 50" nearly new cans. Shawnee Ice Co., Shawnee, Okla.

WANTED—a full block crusher, an elevator or conveyor which may be used in connection with our sizing equipment to convey blocks of ice to the full block crushers. Will pay a fair price. Write R. N. Burgess, Rainier Ice & Cold Storage Inc., 6004 Airport Way, Seattle 8, Wash.

FOR SALE—One 15 ton Acme shell & tube condenser. 3x3 and 5x5 self-contained Yorks. 3x3, 5x5, 7½x7½, 8x8 and 9x9 York compressors, splash lubrication, Receivers, all sizes. One 3 ton York flake ice maker with bin and Freon compressor. Write E. Niebling, 1546 St. Clair Ave., Mt. Healthy, Cincinnati 31, Ohio.

FOR SALE — COMPLETE ICE PLANTS

60 ton-14 can pull; 35 ton, Diesel drive-6 can pull; 25 ton-5 can pull.

AMMONIA COMPRESSORS

130 h.p., 3 cyl. Superior Diesel engine, 600 r.p.m. 75 h.p. motor—720 r.p.m. 30 h.p. motor, 860 r.p.m.; Gifford Wood ice sizing unit complete with screens and bins, Ice cans 11½" x 22½" x 44" low pressure, 11½" x 22½" x 45" high pressure, scoring machines, blowers, agitators, etc.

MISCELLANEOUS EQUIPMENT

12½ x 14½ York, ⅓ and ⅔ capacity control.
10x10 York, 4000 volt, 300 r.p.m. motor.
9x9 York, 75 h.p. synchronous motor.
8x8 York, V-belt drive to 75 h.p. motor.
7½x7½ York, V-belt drive to 60 h.p. motor.
6½x6½ York, high speed.
3x3 York, self contained unit.
11½x8 Frick booster compressor, V-belt drive to 50 h.p. motor.

JOHN F. CARSON
"A" & Venango Sts. Philadelphia 34, Penna.
GArfield 6-2221

FOR SALE
USED ICE PLANTS AND REFRIGERATING EQUIPMENT
Complete ice plants—10-50 ton.
Ammonia compressors—all sizes.
Valves and fittings.
Condensers, brine coolers, ice cans.

B & E REFRIGERATING CO.
2 ORANGE ST., NEWARK 2, N. J.
Phone: Mitchell 3-7790 Cable address "BERECO"

WANTED TO BUY—ice cans 11½x22½x57 inside diameter. Must have air tube built in and be in good condition. Western Illinois Ice Co., 451 E. South St., Galesburg, Ill.

FOR SALE—1 Fairbanks-Morse Diesel engine, 70 h.p. 300 r.p.m., one piston, priced at $1,200.00. 1 Fairbanks-Morse alternator, 3 phase, 40 kw., 230 volts, complete with Rockwood base, switchboard and exciter motor, priced at $800.00. One 43 ft. endless belt, 10 in. wide, double thickness, used three years, priced at $125.00. The Athens Ice & Storage Co., Athens, Ohio.

FOR SALE—6x6 high speed force feed lubrication, 7½x7½ York high speed belted to synchronous motor, with vee belts. 9x9 Frick direct connected to synchronous motor, 12x12 Frick direct connected to Ideal synchronous motor. Ice cans, condensers, brine coolers, agitators, blowers, electric cranes, complete ice plants. Parke Pettegrew & Son Co., 370 West Broad St., Columbus 8, Ohio.

FOR SALE — USED ICE PLANTS AND REFRIGERATING EQUIPMENT

2—90 ton York Evaporative Condensers
20 ton Ice Plant, 252 300-lb. Cans, Diesel drive compressor
30 ton Ice Plant, 368 300-lb. Cans, 8 can pull, Electric driven
40 ton Ice Plant, 552 300-lb. Cans, 6 can pull, Diesel driven
60 ton Ice Plant 840 300-lb. Cans, 24 can pull, Diesel driven.
130 ton Ice Plant, 1,378 300-lb. Cans, 26 can pull, Electric driven
10,000 11" x 22" x 47" 300-lb. Ice Cans, Excellent Condition
2,500 11" x 22" x 51" 300-lb. Ice Cans, Excellent Condition
Ammonia Compressors 3" x 3" to 12½" x 14½"
Shell & Tube Ammonia Condensers, Brine Coolers, Receivers, Traps, Valves & Fittings
Write, wire or cable us on any equipment you need.

ENTERPRISE EQUIPMENT CORPORATION
77-79 Alexander Street Yonkers, New York
Yonkers 8-8118-9 Cable Address: ENEQCO

The Book of Refrigeration Knowledge

Basic Refrigeration

PRINCIPLES
PRACTICE
OPERATION

By GUY R. KING
Refrigeration Instructor
Santa Monica Vocational School

THE 29 chapters of this 500-page book contain a complete and simplified presentation of the fundamentals of refrigeration, giving equal treatment to all common refrigerants, design, operation and servicing of the apparatus and systems.

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The text is supplemented by an unusually large number of excellent illustrations, (348). All basic points are graphically illustrated in a way that creates additional interest for the reader and assists him to gain a full understanding.

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With This NEW Improvement Niagara "No-Frost Method" puts you a big step ahead in trouble-free, automatic refrigeration or freezing

Niagara "No-Frost Method" keeps frost and ice COMPLETELY OUT of your cooling, chilling, freezing or cold storage.

It uses Niagara No-Frost Liquid Spray to keep frost and ice from ever forming. It gives you, automatically, refrigeration with no defrosting, and full capacity NEVER cut down by ice building up progressively on refrigeration coils.

Now, a NEW design No-Frost Liquid concentrator, using a new principle, takes away moisture as fast as it is condensed by evaporating it at low temperature —not boiling it away at high temperature. It has 14 times the capacity of the old method per dollar of investment — one concentrator will handle a battery of high capacity spray coolers.

This gives you more refrigeration at lower cost; less machinery in less space. You operate at high suction pressure, saving power and wear and tear on compressors.

The extra capacity and lower cost both for equipment and operating makes this method advantageous for every type of refrigeration use—both for freezing and for moderate temperatures—for large "live" loads as in meat chilling or in fruit and vegetable precooling — for rooms that are filled and emptied of product daily, such as milk rooms and terminal storage warehouses.

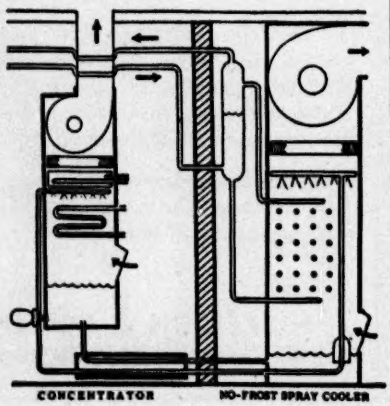
You get true trouble-free refrigeration . . . No brine . . . no salt solution . . . no dirt . . . no mess . . . It is entirely clean; you get rid of dirt and odors. You reduce both equipment and operating costs.

For complete information write to the Niagara Blower Company, Dept. IR, 405 Lexington Avenue, New York 17, New York.

If you need extra capacity . . . the Niagara "No-Frost Method" can help you get it with your present compressor.

•

A simple method, easily maintained. Saves a third of your refrigeration cost . . . Ask for Niagara Bulletins 118 and 119.



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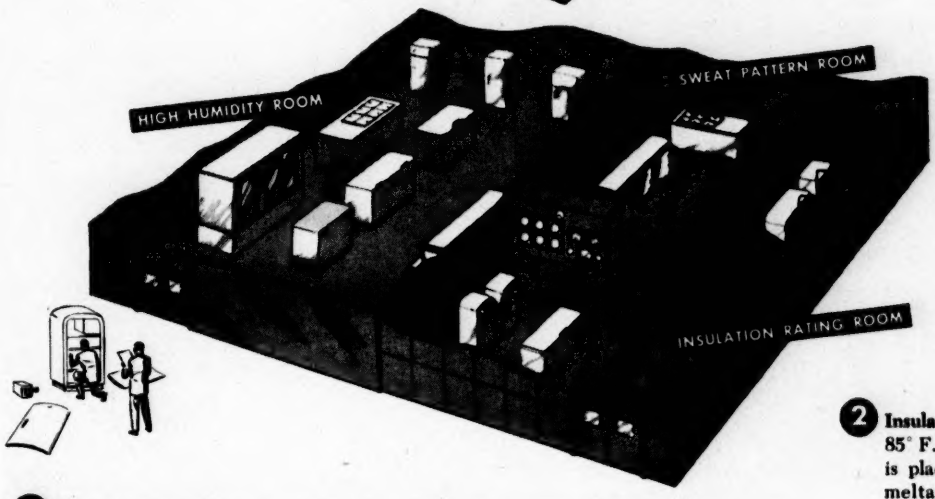
5 Dismantling and Inspection After all tests have been completed, the unit is dismantled in your presence. Any defects in insulation, construction and assembly are noted. Finally, you receive a confidential report with all test data.

1 Initial Examination Before the Life Test begins, your equipment and its crating are carefully examined. Condition of the unit must be nearly perfect to assure fair, accurate test results.



2 Insulation Rating Room In this 85° F. room held at 50% R. H., ice is placed in the cabinet and its meltage accurately measured. This determines Btu loss. Later, after your unit has endured 10 weeks in the High Humidity Room, the same ice meltage test is repeated to obtain an efficiency rating on the "aged" unit.

4 High Humidity Room In this third room, your unit is given severe thermal punishment—10 weeks at 100° F. and 80% humidity! This equals 3 to 5 years of normal use. After this test, the unit is again tested in the Insulation Rating Room.

3 Sweat Pattern Room In this room, your unit is exposed to varying combinations of humidity and temperature, and the sweat pattern formed on cabinet surfaces is marked. Excessive condensation on cabinet exteriors indicates weak spots in insulation or construction.

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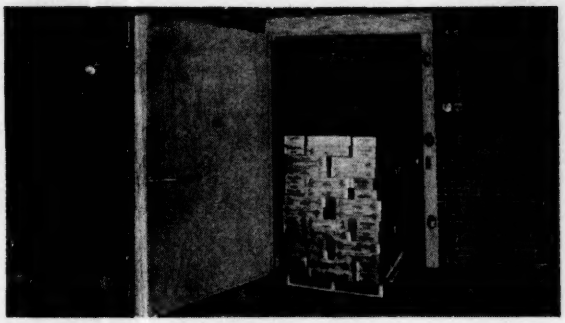

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